UNIT 5 CONCEPT AND NATURE OF KNOWLEDGE

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5.1 INTRODUCTION

Knowledge and its transmission is a central concern of education. What aspects of the vast fund of human knowledge are to be selected for transmission and what criteria are to be used for selection of critical issues in curriculum planning? In this context, knowing about the philosophical basis of knowledge and knowing various sources of knowledge and their validity become important.

Philosophy is conceived as critical inquiry, and as a second-order discipline, is concerned with the claims of various concrete forms of intellectual activity involving Knowledge. It is an activity of analysis, clarification and criticism of concepts. This view of Philosophy has been inspired by the realization that the results of any sort of enquiry are acceptable only in so far as they are publicly testable, reliable and coherent with the rest of public knowledge. Knowledge must never be thought of merely as vast bodies of tested symbolic expressions. These are only the public aspects of the ways in which human experience has come to be shaped. To acquire knowledge is to become aware of experience as structured, organized and made meaningful in a specific way. The varieties of human knowledge constitute the highly developed forms of curriculum planning and the choice of disciplines. It is necessary to know how knowledge has evolved and epistemological considerations of different forms of knowledge that go under 'Disciplines".

In this unit, we shall examine human knowledge - its nature, sources and its various kinds. This is the principal task of the branch of philosophy called 'Epistemology'.

5.2 OBJECTIVES

After going through the unit, you should be able to:

- relate 'knowledge' with 'knowing';
- list the requirements of 'knowing';
- differentiate between a priori and a posteriori knowledge;
- explain the different theories of knowledge;
- analyse the different sources of knowledge for their validity and limitations;
- differentiate between a law and a theory;
- cite examples of laws and theories from your subject background (science, maths or social science);
- cite examples of a theory being refuted and succeeded by another theory;
- explain the role of explanation with examples;
- explain the role of assumptions and its limitations; and
- explain the ways of validating the knowledge.

5.3 CONCEPT OF KNOWLEDGE

The nature of knowledge has been a central concern in philosophy from the earliest times. In the history of thought, "Theory of Knowledge" has been construed as a branch of philosophy known as Epistemology. 'Epistemology' comes from the Greek words *'episteme'* meaning Knowledge and *logos* meaning discourse or science. Epistemology is an area of philosophy concerned with the nature and justification of human knowledge. It is that field of philosophical inquiry which investigates the origin, nature of knowledge, methods, validity and limits of knowledge. Epistemologists, historically, have concerned themselves with such questions as: What is knowledge? Is knowledge one or many? What is the structure of knowledge and what are its logical categories? And so on.

5.3.1 Definition of Knowledge

According to the most widely accepted definition, knowledge is justified true belief. That it is a kind of belief is supported by the fact that both knowledge and belief can have the same objects and that what is true of someone who believes something to be the case is also true, among other things, of one who knows it. For example, sun rises in the east is the knowledge or true belief that is supported by the fact which is arrived at through daily observations for millions of years by people.

It is obvious and generally admitted that we can be said to have knowledge only of what is True. If one admits that a proposition (p) is false, it must be admitted that the person did not "know" it and that no one else did, although the person may have thought and said so. Beliefs that merely happen to be true cannot be regarded as knowledge, because knowledge is justified belief.

First of all, *knowledge is expressed in propositions.*

A meaningful sentence that conveys truth or meaning is said to be a *proposition*. For a sentence to be meaningful, the words in a sentence should be meaningful. That is, the concepts expressed in the form of words should be true. They should correspond to the state of affairs that is existing at present or existed once upon a time.

A proposition (p) is what the sentence means. Two or more sentences can be used to express the same proposition. It is the proposition that is true or false, but it is the sentence that has meaning or fails to have it. Not every sentence states a proposition. Only sentences that we use to *assert* something express proposition. For example,

A square has four sides that are equal.
I know that ice melts on heating.

But in order to understand any proposition, we should first of all know the concepts involved in a proposition.

According to John Hospers, there are two requirements for knowing: (a) objective requirement (p must be true) b) subjective one (one must believe p)

These two requirements are discussed in the following sub-sections.

5.3.2 Requirements of Knowing

a) A proposition (p) must be true.

One cannot "know" p if p is not true. If one says "I know p, but p is not true" - the statement becomes self-contradictory, for a part of what is involved in knowing p is that p is true. Therefore, 'knowing p is knowing p to be true'.

John Hosper in his analysis of requirements of knowing differentiates the term "know" from other verbs like "believe", "wonder", "hope" and so on. For example, one can wonder whether p is true, and yet p may be false; one can believe that p is true, though p is false and so on. Hosper states that believing, wishing, wondering and hoping are all psychological states, which are occurrent and dispositional in nature. Unlike these psychological states, knowing is not merely a mental state. It requires that the proposition one claims to know is true. But the truth requirement, though necessary is not sufficient. For example, one may not know certain concepts in physics like "energy" and "light wave" unless one happens to be a specialist in that area though they are true. But the fact that they are true does not imply that one knows them to be true. Though there are many true statements, one may not be in a position to know that they are true. There are other conditions that are required for knowing a proposition.

b) Not only must a proposition (p) be true; we must believe that a proposition (p) is true.

This is the subjective requirement, which implies that one must have certain attitude towards p - not merely wondering or speculating about p, but positively believing that p is true. There may be numerous statements that one believes but do not know them to be true, but there can be none which one knows to be true, but does not believe them, since *believing* is a part (a defining characteristic) of knowing. "I know p" implies "I believe p" and "he knows p" implies "he believes p", for believing is a defining characteristic of knowing. For example, "I know that the Sun rises in the east" implies that I believe in it. But believing p is not a defining characteristic of p's being true; p can be true even though one does not believe in it.

c) Necessity of evidence or a reason to believe p.

There is a necessity for evidence or a reason to believe a proposition to be true. For example, 'I know that the sun will rise tomorrow', 'I know that ice melts on heating' have excellent reasons or evidences to believe them to be true, because of their certainty. The knowledge that we gain about the physical world through our senses and our judgements about them amount to be true. But there are other kinds of propositions where only self-experience is involved like, one 'feeling headache' or 'feeling drowsy' or 'feeling depressed', to which one may not require evidence. Knowing these propositions is not well covered by the definition of knowing that require evidence. To

say "I feel pain", the experience itself constitutes all the evidence that one requires. One can know the statement to be true, simply on the basis of having an experience. This holds only for propositions reporting the occurrence of sense-experiences. There are also statements, which are analytical in nature for which evidence is not claimed. The statements of this class are called 'truths of reason' for which evidence is not required. Even if it is required, it is not in the sense as described above. These are truths in the "realm of necessity". Based on the above analysis of knowledge, one can distinguish three divisions of knowledge, which are as follows:

5.3.3 Three Divisions of Knowledge

Based on the way or manner in which it is obtained, knowledge can be classified under three heads :

1. ***A priori Knowledge*** is knowledge whose truth or falsity can be decided before or without recourse to experience (a priori means 'before'). Knowledge that 's a priori has universal validity and once recognized as true (through the use of pure reason) does not require any further evidence.

Logical and mathematical truths are a priori in nature. They do not stand in need of empirical validations. Traditional philosophers have regarded a priori knowledge as superior to all other knowledge. The propositions that come under this category of knowledge are known as analytical propositions.

An analytic proposition is one whose truth can be determined solely by an analysis of the meaning of the words in the sentence expressing it and whose truth or falsity can be decided by pure reason without recourse to verification with experience, for example, the propositions "bachelors are unmarried men" or "two plus two equals four"

2. ***A posteriori knowledge*** is the knowledge based upon observation and experience. This is the knowledge of the scientific method stressing accurate observation and exact description. The propositions that fall under this category can be looked at from the point of view of whether they contain any factual content and from the standpoint of the criteria employed for deciding their truth or falsity. For example, we have propositions like

Ice melts.
Snow is white.
Metals conduct heat and electricity.

These propositions give us factual information whose truth or falsity can be decided only through observation and verification. These are called synthetic propositions.

An analytic proposition is a statement whose negation is self-contradictory. If someone said, 'Black is not black' he would be contradicting himself. If a true analytic proposition is denied, one would get a self-contradictory proposition. One can negate the proposition "Snow is white" - assuming that whiteness is not a defining characteristic of snow - we get "snow is not white", which though false, is not self-contradictory. Thus we get

Analytic Proposition (snow is snow)	**Synthetic proposition (snow is white)**
Negative : Self-contradictory propositions (snow is not snow).	Negative : False synthetic propositions ("snow is not white").

It can be clearly demonstrated that mathematical knowledge is of the analytic- a priori type and scientific knowledge is of the synthetic- a posteriori type.

3. ***Experienced knowledge*** is always tentative and cannot exist prior to experience or be concluded from observation. It must be experienced to have value.

Basic to the three types, is propositional knowledge (a priori and a posteriori) and it is to this type that the structure of the knowledge question is addressed. This has important implications to curriculum planning.

Conflicting systems of philosophy have arisen from different initial choices among the ways of knowing. It is important to know in advance some ideas about the main ways in which knowledge could be related to the things known. There are six theories of knowledge in the field of Epistemology which are as follows :

5.3.4 Six Theories of Knowledge and Truth

a) **The Revelation Theory:** This view holds that the final test of the truth of assertions is their consonance with the revelations of authority. We recognize this as one of the views, but not the only one, favoured in religious thought. However, weight of authority has played its part in areas other than religion. Aristotle's utterances, for instance, were depended upon for centuries as the *sine qua non* of wisdom. It is said that even scholars of Galileo's time refused to look through the telescope because Aristotle had not indicated this as permissible.

b) **The Coherence Theory:** This theory says that a statement is true if it is consiste with other statements accepted as true. Statements, of course, must be "true" to the particulars to which they refer, just as revelations accepted as valid in religion are not necessarily extended to other areas of belief. But on the hypothesis that the entire universe expresses a single unified and rationally consistent order, each statement accepted as true must be congruent with *all* other statements accepted as true. Thus, in a system of geometry, all propositions are congruent with all other statements accepted as true in that geometry. But geometry does not usually assume that such congruence is to be found everywhere outside geometry, nor even as between different systems of geometry. Certain idealists in philosophy have held the view that the whole universe is a perfect façade of reason in which all particular truths are united into one congruent whole.

c) **The Presentative Theory:** This view holds that reality as presented to the mind in perception is known directly and without alteration. Errors of perception occur, but further observation is able to detect and explain them. Realists, specifically the neo-realists, favour this view. The presentative view is typical in common-sense thinking; although common sense, with admirable impartiality, may adopt all six of our theories of knowledge as convenience requires. The presentative theory regards such traits as the colors, shapes, and odors of objects, which appear to our senses as true objective characteristics of the objects, except for the occurrence of detectable errors.

d) **The Representative Theory:** This view, again favoured by certain realists, holds that our perceptions of objects are not identical with them. This differs from the presentative view sketched above which goes the length of saying that when we perceive truly, our perception is identical with the object perceived. This implies that the object perceived literally enters the mind, which perceives it. The representative realist tries to be more cautious on this point. What we see when we look at a tree is only its image. The tree cannot be identical with this image. The image is in one's mind, and the mind is somehow located in the brain; if the tree is fifty feet high, there is not room enough in one's brain to accommodate it. Although the representative realist does not identify the perception with the object, he believes that the perception usually *represents* the object with accuracy. The image is usually a reliable replica of the object. Again, we consider that the tree continues to exist whether or not we are seeing it.

e) **The Pragmatic Theory:** This view holds that statements are true if they work successfully in practice. If an idea or principle is effective in organizing knowledge

or in the practical affairs of life, then it is true. The belief of the pragmatist that the function of knowledge is to guide thought and action successfully is at the root of the important development in American education known as the progressive movement.

The Intuition Theory: This view varies so much in its definition that it sometimes becomes identical with some of the other theories sketched above. At one extreme, intuition refers to a mysterious and immediate inner source of knowledge apart from both perpetual observation and reasoning. In this sense, intuitionism is encountered in some philosophies (e.g. neo-Platonism and Bergsonism), in religion, philosophic spiritualism, and in the twilight areas of mysticism in general. At the other extreme, the term intuition has been used to designate generally accredited and immediate ways of knowing, such as in immediate sensation, or the immediate awareness we may have of some self-evident or axiomatic truth. Thus Aristotle's principle in logic that any object A cannot be at the same time be *not-A* is said by some to rest on immediate intuition. It does not arise from proof because all proof presupposes it. A related concept denoted by the term "insight" occurs in the literature of modern Gestalt psychology.

5.3.5 Sources of Knowledge

A proposition may be true although one does not know it to be true. By what means, then do we come by knowledge? There are six sources of knowledge, which are as follows:

1. Knowledge through sense experience

We can know many things about the external world, their characteristics and so on through our senses - by seeing, smelling, touching, tasting, hearing and so on. It is through touching and seeing we know that there is a table in front of us. Our senses on various occasions inform us of what a thing's characteristics are. But sometimes we commit mistakes while perceiving things around us through our senses. For example, we may mistake a rope for a snake which is known as perceptual error. Here it is not our senses that have deceived us. We have been led to make judgements that we subsequently found to be untrue. The error lies in the judgement, but not in sensation. All the senses can do is to present us with experiences which requires judgement. The existence of perceptual errors show that our judgement is fallible, but not our senses. When we make a perceptual error owing to incomplete or fragmentary sense experience, it is always further sense experiences that lead us to discover our error. For example, one can get closer and confirm whether it is a rope or a snake so the fact of error based on sense experience does not show that we must appeal to something over and above sense experience; it only shows that we need more sense - experience. Thus one can get the knowledge about the external world through external senses.

There are also the 'internal senses', acquainting us with our own internal states (feelings, attitudes moods, pains and pleasures), as well as our own mental operations such as thinking, believing and wondering. In these cases, sense-organs are not involved in knowing; nevertheless, on the basis of certain experiences one may state certain propositions like "I am having a headache", "I feel sad"; "I feel ill" and so on. In all these cases the fact that we are having the experience in question is the only guarantee we have or need for the truth of the proposition. In general, feelings are occurrent states, and their occurrence warrants one to say that he or she has a headache, or feels sad or ill.

The words that can be used to describe people's 'inner states' or 'modes and emotions' are 'dispositional words'. For example, "I am in an irritable mood" means that if someone were to annoy me, I would be irritated more quickly than usual. It is

important to make a distinction between occurrent and dispositional state in order to understand knowledge through internal senses. A seed having a potency to grow into a plant, but kept in a jar is said to be dispositional; when it grows into a young plant being provided all favourable conditions, then it is said to be in an occurrent state. Thus we have the knowledge of our inner states of mind which can be occurrent in a situation or dispositional (having the potency or properties) to be something given a chance.

Knowledge through Reason

Certain types of knowledge like 'two plus two equals four' are arrived at by means of reasoning. There are two types of reasoning which serve as the source of knowledge (i) deductive and (ii) inductive. The most familiar kind of reasoning, which is often taken as the model for all reasoning is 'deductive reasoning'.

In a deductive argument, the conclusion logically follows from the premises. If the premises are true, the conclusion that follows must be true. For example,

a) 'If it is raining, the streets will be wet.
It is raining.
Therefore, the streets will be wet.

b) All men are mortal.
John is a man.
Therefore, he is mortal.

The above two examples represent a valid argument. If one accepts the two premises, one must also accept the conclusion - conclusion follows from the premises. It is important to distinguish validity from truth. In a valid argument, the premises need not be true; it is only required that the conclusion follow logically from the premises. For example,

c) All cows are green.
She is a cow.
Therefore, she is green.

In this example, the argument is valid, i.e. conclusion follows from the premises. But the premises are not true. Therefore, the conclusion arrived at is also not true. When chains of reasoning are involved, affirmation of the consequent does not logically corroborate the theory. Bertrand Russell demonstrated it through a syllogism which is as follows.

d) If bread is made of stone
And if stone is nourishing
Then bread is nourishing.

Although the empirical evidence strongly affirms the consequent, we can hardly say that it corroborates either of the premises. Sometimes, the premises may be true, but there may not be valid arguments. For example,

e) India is a democractic country.
2 plus 2 equals 4.

Therefore, he is driving the car.

In the above example, the conclusion does not follow from the premises, although all premises happen to be true.

In order to know that a conclusion is true, (a) we have to know that the premises are true and (b) the argument is valid i.e. the conclusion follows logically from the premises. In deductive reasoning, the conclusion is, however, contained in the premises in the sense it is deducible for a specific case from the premises. In order to know if the conclusion is true we have to know that all premises are true and that the argument is valid.

ii) Inductive Reasoning: In inductive reasoning, the premises provide evidences for the conclusion - but not complete evidence. The conclusion is not certain but only probable to a certain degree. For example,

a) Crow 1 is black.
Crow 2 is black.
Crow 3 is black. (and so on for 10,000 crows or more than that)

Therefore, all crows are black.

Similarly,

b) Iron conducts heat and electricity.
Copper conducts heat and electricity.
Aluminum conducts heat and electricity.
(and so on for all metals).

Therefore, all metals conduct heat and electricity.

Here, though 10,000 premises where crow being black are true, the conclusion is not established. It is always possible; the next crow, which we may come across, might be white. Similarly, there may be a metal, which does not conduct heat and electricity. In inductive reasoning, truth is established based on earlier evidences for something, which is not observed. For example, the proposition like 'tomorrow the sun will rise in the east' is made based on so many years of observations of seeing sun rising in east;. Though the phenomenon for next day is still not witnessed. Based on the repeated observations. We can say inductively that the sun will rise in the east. This conclusion has some probability on the basis of evidence presented in the premises. In an inductive argument, we rely on certain laws of nature, which are formulated based on certain recurring uniformities in the course of our experience. For example,

i) Green plants prepare their own food.

ii) Water vapourises on heating.

iii) Metals expand when heated.

There are countless uniformities that are quite familiar in our experience, and on the basis of them we construct inductive arguments. In an inductive reasoning, the conclusion is not certain but only probable.

Authority: It is not a primary source of knowledge where one experiences knowledge through one's own reasoning or sense experiences. We accept certain things as true on the basis of authority. But certain precautions have to be observed in the case of knowledge coming from authority (one who has an authority or claim over particular knowledge).

1. The person whose word we take on authority must really be an authority, one who is a specialist in his field of knowledge.
2. Whenever one accepts another person's statement on authority, he should be able to find out for himself or verify the knowledge. For example, we can empirically check the truth of Einstein's theory of relativity, though it would take years of special training and experimentation.
3. The authority should be able to provide evidential proof for the knowledge he possesses and explain it in mathematical and scientific language. In other words, the true knowledge should yield to experimental verification and logical explanation.
4. The knowledge claimed by the authority should have acceptance by the community members who are also experts in that area.

"*Authoritarianism*" asserts that knowledge is guaranteed or validated by authority. Since man is naturally suggestible and is not in a position to verify all of his so-called

"knowledge", it is not surprising that such a source is propounded. Although authority is mentioned as one of the sources of knowledge, it should rather be construed as a source concerning the psychology of belief. It is decidedly weak when compared to sense experiences and reasoning and completely helpless in adjudicating between conflicts of authority which are prevalent in all fields, such as science, philosophy, arts, religion and politics.

Intuition

It is a label for a certain kind of experience when a conviction of certainty comes upon us quite suddenly like a flash. Here also we should exercise certain precautions.

a) Intuitions sometimes conflict. For example, two people can intuit about tomorrow's weather in different ways. How do we decide which of them is true in that case? If 'X' asserts that it would rain tomorrow and Y asserts that it will not, we can wait for tomorrow to find out which of the claims is true. But this we do through sense experience (seeing it rain), not by intuition. Intuition itself provides no way of deciding which of two conflicting intuitions is correct.

b) Knowing by intuition does not really explain "knowing how". It tells us nothing about the validating procedure.

We have examples from history of scientific investigations (Archimedes principle) and mathematical discoveries where the knowledge was discovered through intuition and proved to be valid also. One can argue here saying, the knowledge was not arrived at as through a flash of thought without certain amount of presuppositions. The problem was contemplated upon for a long period in search of a solution in cases where the scientists were supposed to have intuited. In the process, the scientist must have intuited the solution, which was explained later with sufficient grounds of evidence and reasoning. However, this does not guarantee that every time the scientist intuited, it had carried a valid piece of knowledge.

Revelation

This source has the same problem as intuition. Sometimes one claims to know something by means of revelation. For example, "It was revealed to me in a dream" (or a vision). What if one person had a vision that told him one thing, and another person had a vision that told him the opposite? The fact that the person had a dream or a vision, does not show that its message is true or can be trusted. If what it says is true, its truth can be discovered only by other means.

Faith

This source of knowledge overlaps the previous one having the same problems. "I know this through faith"; "I have faith in it, so it must be true"; "I believe it through faith, and this faith gives me knowledge". The same difficulty that plagued the claims to knowledge by intuition and revelation occurs here. People have faith in different things and the things they claim to know by means of faith often conflict with one another. Faith is a firm belief in something for which there is no evidence. It is an attitude of belief in something in the absence of evidence. What feeling or attitude one has towards the belief, and whether that belief is true, are two very different things. So it cannot be a valid source of knowledge.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answers with those given at the end of the unit.

1. Describe the kind of sense-experiences, which would be relevant to ascertain the truth or falsity of the following propositions:
   a) Ice floats on water.
   b) I feel anxious.
   c) Where there is smoke, there is fire.
   d) I feel that God exists.
   e) The weather will be hot tomorrow.
2. Which of the following statements would you be justified in accepting on authority from some expert in the field? Which would you have to reason to take on authority at all, and why?
   a) Gold is malleable.
   b) God will reincarnate in some form, to remove miseries from the world.
   c) Some day there will be no more war.
   d) Every even number is the sum of two prime numbers.
3. Analyse the following examples for their source of knowledge and validity of knowledge.
   a) All dogs are mammals.
   All cats are mammals.
   Therefore, all dogs are cats.

5.4 NATURE OF KNOWLEDGE

By means of sense experience we learn many things about the physical world. We perceive countless things, processes and events. But if our knowledge ended there, we would have no means of dealing effectively with the world. The body of knowledge consists of a series of facts, concepts, principles, classifications, generalizations, laws and theories. These will be discussed in detail in the sub-sections that follow.

5.4.1 Classification

No two things are exactly alike in the universe in all aspects. Even though they may be alike, we may still use the characteristics in which they differ as a basis for putting them in different classes. Similarly, there is no doubt that primitive man's approach to temperature was based on his classification of temperature into very hot, hot, moderately warm, lukewarm, cool, cold and very cold. In daily life, what we do is to use rather inclusive class words, such as 'dog' and then if the need arises, we can make differences within the class the basis for further distinction, such as "Alsatian, Pomeranian, German shepherd" and so on; marking out as many sub-classes as found convenient within the same class.

The classification depends on one's interests and one's need for recognizing both the similarities and the differences among things. Animals are classified in one way by the zoologist, in another by the fur industry, in still another way by the leather industry. There are as many possible classes in the world as there are common characteristics or combinations thereof, which can be made the basis of classification. Nature guides us in the selection of classes, through certain regularly occurring combinations of characteristics, which are useful in assigning a name to the combination.

Are classes in nature or are they man made? Classes are in nature in the sense that the common characteristics can be found in nature, waiting to be made the basis for classification. On the other hand, classes are man-made in the sense that the act of classifying is the work of human beings depending on their interests and needs.

5.4.2 Generalizations

A generalization is a statement expressing relationships between or among concepts. To generalize is to treat things that may appear to be different as if they are the same. A generalization may be a rule, law, principle, probability statement or sentence defining critical attributes. Here are some examples:

"Thrones are the official chairs of rulers".

"Elephants, whales and mice are all mammals".

A generalization expresses the relationship among concepts. The knowledge and understanding of the concepts that are related in a generalization are essential steps before the generalization can be understood and subsequently applied to a new situation. The term molecule as used in the molecular theory is a concept.

Generalizations are used by scientists interchangeably with facts because they are based upon so many direct observations and repeatable demonstrations. Some of the scientific generalizations are:

- Heated metals expand.
- Light is refracted when it passes from less dense to more dense media.
- Metals conduct heat and electricity.

Generalizations enable man to construct broader, more inclusive explanations for the phenomena he observes.

5.4.3 Laws

Scientific knowledge begins only when we begin to notice regularities in the course of events. Many events and processes in nature occur the same way over and over again. For instance, iron rusts, chicken lays eggs, lightening is followed by thunder; cats catch mice and the Sun rises in the east. Nature does contain regularities. We are interested in regularities not because we enjoy contemplating them for their own sake, but because we are interested in *prediction* and *control* over events. Most of the regularities that we find have many exceptions. They are not invariants. For example, chickens lay eggs, but how many eggs they do lay and at what intervals is extremely variable. The scientific enterprise consists in searching for genuine invariants in nature, for regularities without exceptions so that we can say, "whenever such and such conditions are fulfilled, this kind of thing always happens".

Some scientific statements make assertions about unique events. For example, 'This egg smells rotten'; 'This baby has a temperature of 105°F'. Such assertions are termed *singular statements*. Other scientific statements offer generalizations about relationships between concepts i.e. they are statements about classes of events. For example, 'curdling of milk can be brought about by the action of bacteria'; 'Aspirin usually reduces fever symptoms'. Such assertions are termed *general statements*..

Law statements such as Newton's Laws of Motion, Ohm's Law and Boyle's Law belong to the latter class. Each of these laws makes assertions that a relationship exists between two or more concepts; each of the concepts is tied (either directly or indirectly via chain of inference) to observable phenomena.

A law describes a situation which, to use a phrase coined by Norman Feather, ' might conceivably have been otherwise'.

Examples

"Objects fall with increasing velocity".

"Gas pressure is inversely proportional to volume".

These are clear general statements about events of nature, make truth claims which may be checked by experiment.

Prescriptive and Descriptive Laws

Laws of nature are *descriptive*. They describe the *way nature works*. For example, Kepler's laws of planetary motion describe how planets actually *do* move. Laws describe uniformities in nature.

Laws of nature are *a smaller class of* propositions than empirical statements in general. (Any statement whose truth can be tested by observation of the world is an empirical proposition). Laws of nature are the very basis of the empirical sciences.

Characteristics of Laws of Nature:

1. It must be a *true, universal, empirical* proposition.

It must be applicable to *all* members of a given class. A proposition about a single thing may be *material* for a law of nature, but it is not a law.

- This piece of iron rusts
- Some iron rusts
- All iron rusts

In behavioural sciences, unlike in the physical sciences, we come across many such singular propositions and very few genuine laws.

A law must be an empirical truth of the form "All A is B" where B must be connected with A not as a matter of necessity, not a priori but as a matter of contingent fact. The law 'Metals expand when heated' is a taxonomy of law statement involving a relationship between classes of objects ('metals', and 'things which expand when heated').

The so-called "laws of human nature" on examination turn out to be analytic. Consider "people always act from the strongest motive". The strongest motive turns out to be the motive from which one acts.

Even true propositions about *some* members of a class are not considered as laws of nature. They are called *statistical laws.*

2. These universal propositions are hypothetical in form.

They are usually interpreted as propositions of the "if...then...." form.

i) "All iron rusts when exposed to oxygen" is actually "If there is iron, it will rust when exposed to oxygen".

ii) "If molecules are in rapid motion, then finely divided particles suspended in water are seen".

The hypothetical interpretation of laws can get us into trouble sometimes.

For example, if p is true then q is true - It is not the case that p is true but q is false. If there is friction, there is heat - It is not the case that there is friction but no heat (true).

"All unicorns are white" though a universal hypothetical proposition is not a law of nature because there is no evidence from *other laws that this law is true.*

3. A law of nature is open-ended. It has an infinite range both in time and space. It is an open class with no structures of time and space.

i) All the chickens in this poultry are white.

(limited to a definite area in space and time).

ii) All the chickens I have ever had in my poultry are white.

(It would say nothing about *all* chickens).

(They are universal in form but universality restricted in time and space).

The number of things covered is finite and this finiteness may be inferred from the terms of the proposition itself. Evidence for the proposition exhausts the domain of application.

But "all crows are black" does not have these difficulties.

The claim of the laws of nature *extends into the future* and this enables them *to be made the basis for* prediction.

4. A law of nature should have some indirect evidence for it.

"All crows are black" is not a law because the only evidence for it is direct evidence. *Laws of Science are not viewed in independence of one another. Together they form a vast body or system with each law mutually reinforcing others.*

"All crows are mortal" is supported by much indirect evidence such as the mortality of organisms in general, the biochemical deterioration of tissue, increase in auto-allergenic response. But "all crows are black" relates to their significant regularities of either greater or lesser generality. A crow that was not black would change no other laws known to us but a crow that was immortal would excite considerable scientific surprise because it might force us to reconsider many other laws (about deterioration of tissue etc.) with which it is interlocked. Similarly, "All metals are good conductors" is so fundamentally tied to other laws (of atomic structure) that a counter instance would have far-reaching consequences.

Whether or not something is called a law, then, depends to a large extent on how deeply embedded it is in a wider system of laws.

5. Universal propositions whose degree of generality is greater are more likely to pass as laws.

As explained earlier, the assertions that have more generality can be considered as laws, when compared to singular statement. For example,

"Silver is a good thermal conductor".

"All metals are good thermal conductors" (more general).

"Tungsten melts at 3370°C.

"All rare-earth metals have higher melting points than the halogens" (more general).

Sometimes one of those conditions works against another and the outcome is not certain.

Einstein refers to the constancy of the velocity of light in a vacuum as a law of nature (limited generality, but a very fundamental item).

The mass of the electron, (not considered a law as its precise value remains largely independent of the main body of science.

5.4.4 Theory

Theories are statements that explain a particular segment of phenomena by specifying certain relationships among variables. A theory is general in its approach it is not

specific in nature like facts and principles. It is of a higher order of abstraction than a fact or principle; Theories relate, explain and predict wider varieties of experimental and observational findings in the simplest and efficient way.

Scientific theories serve as means and ends in the development of science. As means they provide a framework, which guide scientists in making observation and discovery. They summarize knowledge and put knowledge in an order within a given field. As ends, theories provide scientists explanations for observed events and relationships for specific phenomena with objectivity. They do so by showing the relationship between variables and explaining how they are related. On the basis of understanding of such relationships, scientists make deductions and predict about what will happen in certain situations under specific conditions. In a scientific theory, predictions are generated and empirically tested.

The most powerful question that we can ask of a theory is not 'Is it true', but 'Is it capable of being proved false?'. According to Karl Popper, it is the ability of a theory to be refuted that is, the most important criterion for judging whether the theory is scientifically sound.

Difference between a law and a theory

The terms *Law* and *Theory* are sometimes interchangeably used in science. Newton's $F = G\ m\ M\ /R^2$ relationship, for example, is frequently referred to as his law of gravitation, occasionally as his Theory of Gravitation.

Nevertheless, it can be argued that in most cases, it is possible to distinguish between laws and theories because they have rather different syntactical structures.

In case of laws, overt observational or laboratory procedures are available to give operative meaning to the terms in the relationship, whereas in case of theories, no such direct procedures are possible. For example, it is possible to operationally define the potential difference for Ohm's law (in terms of number of standard batteries in series and mass of metal deposited at an electrode). While in the kinetic theory of gases there are do direct operational procedures for testing the relationship of pressure with the number of molecules per unit volume, molecular mass and the average of the square of the molecular velocity' '$p = 1/3\ nm\ V^2$.

In general, we construct or devise theories, but we discover laws of nature. A scientific theory always contains some term that does not denote anything that we can directly observe. If we can observe something only through a telescope or microscope, we are still said to observe it. But if there are no conditions under which we can observe it, it is a theoretical entity; and when the theory-word is a part of a statement, that statement is said to be a theory. For example, protons and electrons cannot be observed, though we do observe many things that are presumed to be effects of them. So the statements about protons and electrons are theory but not law.

Difference between a fact and a theory

A fact is something we already know. It reports a single event (Eg. there is a sun in the sky right now). A theory states things that are not yet observed. (Eg. protons and electrons). It reports an infinite number of events resulting in an universal statement. (Eg. The Sun rises every 24 hours). A scientist makes observations and records them in mathematical language, while a theoretician tries to formulate a general mathematical proposition by incorporating the facts observed and develops his theory by seeing relationships between variables in operation and deriving certain predictions of facts in mathematical propositions.

Theories often offer a crude and general explanation of a phenomenon. They are refined and modified as knowledge in the presence of facts. The discovery of facts is essential in order to determine whether a theory can be confirmed or rejected or

reformulated. A scientist holds the theories tentatively, always prepared to abandon them if the facts do not bear out the predictions and looks for a new or improved theory.

A theory provides means for its own interpretation and verification. In other words, it provides deductions, which can be tested empirically.

It comprises a model which is a mental picture, analogy or mathematical relationship that permits the theoretical concepts to be visualized in more or less familiar terms.

5.4.5 Explanation

The great advantage of theories is that they possess tremendous explanatory power. Without them no advances in any field of knowledge would be possible.

What is a scientific explanation?

A question seeking explanation begins with 'why?'. "Why" questions may be a request for reason or a request for explanation. Giving reasons is not the same thing as explaining. Reasons are given for holding beliefs or believing something to be true. Explanation is of events and processes in the course of nature (Why does iron rust? Why do rivers flood? Why does CO kill?).

If a person is rational, the reason he holds a certain beliefs also explains why he holds it: he wants to believe what is true. But this is not always so. The reason a person may give for belief in a benevolent God ("Why do you believe in a benevolent God?") may be different arguments for God's existence. Explanation of why he holds this belief may be that he wants a father substitute or a protector in a cold, harsh world.

"Why" as a request for explanation of occurrences in nature.

Let us consider 'why' questions seeking specifically explanation of a *particular* event.

Why does this book fall if dropped?

Why did the window break?

Why does ice float on water?

Our explanation includes:

1. Certain laws of nature or well established general theories (The fragility of glass, the mass and velocity of the object striking it).
2. Certain particular facts (someone threw a stone at the window).

We have to have both of these in order to explain the event.

The particular facts may be known from direct observation or may be a hypothesis. The hypothesis alone does not explain the event without the law nor does the law alone can explain the event without the observed fact or hypothesis.

Since all scientific facts are subject to small errors governed by statistical laws, the best we can ever hope to achieve is to explain why something very much like what happened did happen. The same explanation would apply if a slightly different event took place.

Explanation of laws of nature

Sometimes it is not a particular event that we wish to explain but laws of nature themselves.

For example,

Why do balloons rise?

Why does iron rust?

Why does water expand when it freezes?

Why does sugar dissolve in water?

Here both theories and laws are involved in explaining.

Sometimes we telescope the process-explaining events and then explaining laws.

In either case – explanation of a particular event or a general law – laws and theories are invariably involved. But the law/theory must be one we already accepted and well-established.

Eg. "Why does not this red liquid mix with the transparent liquid?"
Because the red liquid is coloured water and the transparent liquid is gasoline".

"Because it is red" is unacceptable as an explanation for there is no law of nature according to which transparent liquids will not mix with red ones".

Sometimes the law may be a law in a loose sense. It may only be a rough-and-ready generalization that is true much of the time but does not hold for all cases.

a) Why does Y have a cold?"

"Because he played with X who had a cold".

b) "Why were so many members absent from the meeting tonight?"

"There was a conflict with a meeting of another organization to which most of our members also belong". (There is no "law" here).

Unsatisfactory Explanations

Many times we offer "explanations" which do not really explain. For example,

a) 1. "Why does morphine put people to sleep?"
"Because it is a soporific".

2. "Why does plants prepare their own food?"
"Because they are autotrophs".

3. "Why does a rabbit eat grass"?
"Because it is a rodent".

These are name-giving explanations. Instead of information we are giving names 'soporific', 'autotrophs', 'rodent', etc.

Explanation and Prediction

The test of an explanatory principle (law or theory) is that it should have predictive power enabling us to make accurate predictions on the basis of it. (Knowing that water expands on freezing, we can predict the conditions under which water pipes will burst in the future, etc.)

But some laws known to us are very well established and yet virtually have no predictive power (laws involved in the occurrence of earthquakes). This is not because the laws are not known but the specific facts (initial conditions) are not known. On the other hand, Newton's Law of Universal Gravitation and Atomic Theory have great predictive power.

As far as the logic of the problem is concerned, there is no essential difference between explanation and prediction. The apparent difference is that an explanation refers to something already known to be true while a prediction is a commitment to knowing what is going to happen in the future.

Example, a computer succeeded in "predicting" a storm that would take place several years from now. Whether an explanation is scientifically acceptable is decided by an "yes" to the question "If we knew these theories in time and had all presently known facts available to us, could we have predicted that this particular event or something very much like it, would take place?".

Ultimate Laws

We can explain an event by means of laws, we can often explain the law by means of other laws or theories and these in turn by other laws and theories and so on. But soon our knowledge comes to a stop.

Why did the pipes burst? (Water expands on freezing)

Why does water expand or freezing? (Theory about the structure of the water molecule).

Why does water molecule have this structure? (a more basic law?)

It appears that there are basic or ultimate laws of the universe that cannot be explained by any other laws. But we can never be sure that any law that actually confronts us is basic. Tomorrow it may be explained by means of another (Newton's law of Universal Gravitation is a special case of Einstein's Theory of Relativity).

If a certain law is really an ultimate one then to request an explanation of it is self-contradictory. To explain a law is to place it in a context of a wider and more inclusive law. A basic or ultimate law is by definition one of which this cannot be done. One always explains in terms of something else. It is logically impossible to explain when there is no something else in terms of which to do the explaining.

The hierarchy of explanations

Explanations form a hierarchy where the facts on the lowest level are explained by theories (Kepler's laws of planetary motion, Galileo's law of free fall, law of tides) and then each theory in turn is explained by the theories on a higher level (Newton's Laws - Relativity Theory - Unified Field Theory) until we reach the limits of our present knowledge.

As already stated, the process of explaining a theory by another higher theory is similar to explaining a single fact by a theory and is governed by the same four rules viz.

1. A general theory
2. Should be well-established
3. Facts which are known independently of the facts to be explained and
4. Fact to be explained to be a logical consequence of the general theories and of the known facts.

The only difference between explaining a single fact and a theory is that in the case of the latter we use the higher theory to explain not a single fact but a theory and what we deduce from the higher theory is not a fact but a general theory.

Features of this hierarchy

1. The higher theory is an improved theory. It is more accurate and explains the deviations from the earlier laws also. (Eg. Planets moving in elliptical orbits and also deviations).
2. The higher theory covers more ground than all the lower ones put together. It has wider applicability (motion of comets or bullets).

The role of "purpose" in explanations

Our dissatisfaction with many scientific explanations ("Science only tells us how things happen it cannot tell us *why* things happen") may be traced to our relating explanations to the concept of "purpose".

Teleological (purposive) explanations are the oldest type of explanations. For example, storms and other natural catastrophes were thought to be explained by the wrath of

God in order to take vengeance on human beings etc. We no longer use such explanation for natural events. But we do explain events in the human realm by bringing in purpose.

"Purpose" means "intent of a conscious being' or "function". Purposive explanations are acceptable only when there are conscious beings who can conceive purposes and carry them out. In science, they have no value, unless we know what the purpose of the universe or God's will is.

The test of a good explanation is whether we could have predicted the event with the given theory and known facts. Neither of the two theories (purpose of the universe, God's purpose) help us in predicting future events. But if we know the purpose, then we no longer have to make use of the given type of explanation. Eg. "God wills it that there should be a major war once every twenty five years". Suppose 20 years have elapsed and there has been no war, we should then predict that there is going to be a major war within the next five years. We now have a correct scientific explanation but the relevant part of the explanation is

"There is a major war at least once every twenty five years" (Theory).

"There has been no major war for the last twenty years" (Fact).

That the theory is part of God's will plays no role in the explanation.

5.4.6 Succession of Theories

A theory is formulated by a scientist through the process of induction which explains the observed facts. For example, Galileo's law of free fall and law of the tides. All these explained certain known and observed facts. Then Newton asked "why" and constructed a theory which explained all three of the previous theories. This process is similar to that governed by the rules which we use to explain a theory, not a single fact. In other words, what we deduce is not an isolated fact, but a general theory. From Newton's various laws, we can deduce all the laws of Kepler, Galileo's law and the law of the tides. Later Einstein formulated his general theory of relativity from which he could deduce not only Newton's laws, but also laws about the motion of rays of light. Thus, we get a hierarchy of explanations, where the facts on the lowest level are explained by theories, and then each theory in turn is explained by the theories on a higher level until we reach the limits of our present knowledge.

The second notable feature is that 'higher' theories cover more ground than all the lower ones put together. This could be seen from Einstein's theory of Relativity. Even if a single theory were found to unify our body of knowledge, we would still strive to improve this law in a specified direction, broaden it and make it more accurate.

But there are certain things, which cannot be observed, yet we do not deny their entities (electrons). All the things we see and touch are composed of very small particles that no longer be sub-divided, which we cannot see with our naked eyes. But if we assume that they exist, we can account for enormous number of different things that we do observe. The atomic theories of Democritus (460 B.C.) and Lucretius (96-55 B.C.) were primitive but the principle involved was no different from that of modern theories. The unobserved was invoked to explain the observed. More refined atomic theories today have explained countless phenomena undreamed of by the ancients.

Coming to other theories, Freudian psychology has as its first premise that there is a vast reservoir of unconscious mental events consisting of three states of mind; id, super ego and ego. This is a theory, since these states of human psyche cannot be observed. Yet in postulating these entities, Freudian Psychology endeavours to explain a vast number of psychological phenomena like mental conflicts, neuroses, dreams, moods, depression, slips of the tongue and so on, on the basis of a comprehensive theory involving these concepts.

In either case, it is important to remember that the theory contains more than the observed facts that are explained by means of it. A theory that was merely a summary of the observed facts already known will have no explanatory power whatever.

A theory can be refuted or falsified by a new theory which is more justifiable, and scientific. An existing theory can be replaced by a successive new theory with its better explanatory power (The criterion of the scientific status of a theory is its falsifiability or refutability or testability. For example, Einstein's theory of relativity has satisfied the criterion of falsifiability.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of the unit.

4. Which of the following propositions would you consider to be laws of nature? Why?

   a) Iron rusts when exposed to oxygen.

   b) Gold is malleable

   c) All human beings are mortal.

   d) All oceans contain water.

   e) All white cats with blue eyes are deaf.

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5. Which of the following 'why' questions are requests for a reason, and which are requests for an explanation?

   a) Why did the water boil? Because I lighted a burner under it.

   b) Why do you think it will rain this afternoon? Because dark clouds are gathering.

   c) Why did you go to see a movie? Because I want to be happy.

   d) Why do birds build nest? Because they wanted to lay eggs.

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5.5 VALIDATION OF KNOWLEDGE

We have seen that knowledge is obtained through sense experiences, reasoning, authority and other sources. How do we confirm that the knowledge obtained through these sources is valid?

Verification, Confirmation and Refutation: (Empirical and Logical)

Can a statement be verified? Can every statement stating knowledge be verified? What is wanted is a rule or principle which will tell us what sorts of statements have or do not have empirical content, for we cannot examine every individual statement. It is easy to verify statements like "this pot of water will boil at 100 degrees centigrade", since it has empirical content. We can find out whether the statement is true or false by taking the pot of water, heating it and measuring its temperature when it boils.

How about statements like two plus two equals to four? It has no empirical content. But this is an analytical statement and its truth can be shown by purely formal methods. Not all statements are so straightforward as the above empirical statement. Consider statements like "all water is composed of hydrogen and oxygen"; "Saturn is made of green cheese. In the first case, how could we analyse all the water there is to see if it is composed of H_2O? In the second case, we cannot go to Saturn to look or taste.

To verify a proposition is to make such observations, which would entitle us to conclude definitely that the p is true or false. To confirm it is to make one or more observations that would increase or decrease the probability of its truth or falsity without definitely establishing it either way. If 50 marbles out of 100 are found to be black, we have only confirmed but not verified the proposition that all the marbles in the bag are black. It is not verified until one has examined the entire 100. Verifying and confirming are both things we do, operations we perform. We cannot verify or confirm until we know the meaning of the statement to be verified or confirmed. What the testability criterion prescribes is that we know the meaning only when we know how it would be verified or confirmed, whether any one has actually done so or not. Considering the example of a star which is 1000 light years away, it is empirically impossible for us to discover what is occurring on the surface of that star today, since at the rate of 186,000 miles per second the light leaving the star today will not reach the earth for 1000 years; yet we say that there are spots on the surface of the star today. This is not meaningless.

What is required is logical possibility of verification. So, it is possible to verify a statement for its true knowledge logically, though empirically not possible.

There are certain issues to be considered in verification, which are as follows:

a) When must the verification take place?

This is an important consideration, for no statement about the past or the future can be verified now.

"Julius Caesar was assassinated in 44 BC".

This statement describes a past event. It is true that we are not in a position to verify it, since it would require our being present at the Roman senate in 44 B.C., which is logically impossible for us to do now. The sentence is about a past event, but any evidences we may find of the statement are present evidences, because nothing will bring us back to the past. The most we can do in the present is to confirm it, that is find some evidence as to whether it is true.

The same provison will help us with regard to statements about the future.

"There will be a severe economic depression in the world within the next five years".

This statement cannot be verified now, though it has a meaning. But it can be verified in the future and this is sufficient to make it meaningful according to the criterion. In general, with statements about the future, we simply wait and observe what happens at the time predicted.

b) By whom must the verification be performed?

The idea of verifiability by only one has been considered somewhat suspect in the fear that it would permit many statements as meaningful, which should not be so permitted. For example,

"I verified the p that infinity is like glass, because I experienced it today".

But we should keep clearly in mind that any such statement must be about one's feeing – states only, and that it makes no claims to an objective reality apart from that which could be tested by someone else. Concerning one's own experiences (I have a toothache; I feel the pain) it would seem preferable to say that one doesn't need to verify them rather than that one verifies them by introspecting, reassuring oneself that one feel pain and so on. We talk about verification when we are confronted with a statement about something other than our own experiences, when we have to find out through some procedure whether the statement is true.

c) How can statements with an infinite or indefinitely large range ever be verified?

Consider the example, "all crows are black".

There are not an infinite number of crows, but the class is open-ended. Besides, one could not examine future crows as well as all the crows that lived and died before one's birth.

d) There is a small but peculiar class of statements whose verifiability has a different status in the affirmative than in the negative.

Consider the statement "the earth will continue to exist even after living things no longer exist on it".

No human being can verify this statement, since no one would be there to verify it. Still we do know what the statement means and can speculate about its truth. We can draw a picture of the earth without living things on it. It is logically impossible to verify this for there would be no one to do the verifying. It is necessary for certain state-of-affairs to occur (present), or to have occurred (past) in order to make a statement true but it is not verifiability. Verifying is something we do, and it requires someone present to do the verifying.

Confirmability

In view of such difficulties, we speak of confirmability instead of verifiability. For example, one cannot verify that "all crows are black", but one can confirm it by examining thousands of crows and finding all of them to be black. One cannot verify that some day there will be no life on earth, but one can confirm it now by noting that inanimate objects constantly go on existing even after living things die and infer that when the heat and light of the Sun is exhausted, the earth will become too cold to support life. It is easy to see how we can confirm laws of nature (sun rises in the East; water boils at 212° F and so on) not how we could verify them.

Confirmability also involves some special problems of its own. How can I know that observing that this crow is black is a confirmation of "all crows are black" unless I already know what "all crows are black" means? If one does not already know what the statement to be confirmed means, how can one exclude any observation that is put forth as confirmation of it? This implies that

a) One must know whether "p" describes a logically possible situation before one can know whether it is logically possible to test it.

Whether p is logically possible is a priori consideration to whether it is logically possible to test it. One has to know what a sentence means before one knows what observations

would verify or confirm it. Knowing what the sentence means is primary, and knowing how to verify it, is a consequence of knowing its meaning.

In conclusion we can say that verifiability or confirmability criterion, as a general criterion of meaning will not suffice,

i) It will not cover analytic statements, since they are not verified by observation of the world at all.

ii) It will not cover non-assertive sentences such as question, imperative and exclamation. Since these assert nothing, there is nothing that could be true or false.

iii) It will not cover statements about one's own experiences, since these are not verified in any easily intelligible sense of "verified".

iv) It will not cover statements such as "this is good" or "this is praiseworthy" which are of an entirely different order. They are value statements.

v) It will not cover metaphysical statements.

The only area in which verifiability or confirmability is plausible is in reference to empirical statements such as one made in daily life and in science.

Refutation

Knowledge that is expressed in the form of laws or theories can be refuted on the grounds of incompatibility of an event with the theory. It is easy to obtain confirmation or verification for nearly every theory – if we look for confirmations, confirmations should count only if they are the result of risky predictions, i.e., to say, if unenlightened by the theory in question. When the event is incompatible with the theory in question, it can be refuted. Confirming evidence should not count except when it is the result of a genuine test of the theory, and this means that it can be presented as a serious but unsuccessful attempt to falsify the theory (in such cases of Corroborating evidence).

Every genuine test of a theory is an attempt to falsify it or to refute it. Testability is falsifiability. But they are degrees of testability. Some theories are more testable, more exposed to refutation than the others.

In his classic work **Conjectures and Refutations**, Popper uses Marx's theory of Society and Freud's theory of human behaviour as outstanding examples of theories, which fail to meet this important criterion. If political event X occurs, (or human behaviour Y is displayed), then Marx (or Freud) provide a ready explanation. If X or Y do not take place, when they were expected to, then (using a different chapter and verse of the relevant text) that can be explained. Such theories are incapable of making definite and therefore, falsifiable, predictions. In attempting to explain everything, they explain nothing.

5.5.1 Assumptions and their Limitations

Assumption means taking for granted the truth of a proposition for the sake of the argument. The earlier Latin logicians used this term as a technical name for the minor premise of a syllogism. Later this term was used in a double sense to designate the mathematical truths serving as the point of departure in a proof and to designate the starting point of any deduction in abstraction from the question of the truth or falsity of the statement. It is this sense of meaning, which is commonly taken. Assumption is accepted as having the least specific meaning in the family of terms like Axiom, Hypothesis and Postulates. Some of the scientific theories are based upon certain assumptions.

At the same time, we have examples like "Laws of Nature" where no assumption is needed to assure us that nature obeys certain laws. A Law is no more than a description of what actually happens. Let us consider an assumption that the law of nature or

some laws of nature are continuous. This is a very interesting assumption. Although it has factual content, it is impossible to disprove the assumption. Since human beings can make only a finite number of observations, we find ourselves in a position where we can always keep the assumption that laws of nature are continuous. Another example of non-empty assumption is the assumption that the space we live in has 3 dimensions. Physical evidence convinces us that we live a space of at least 3 dimensions. But we cannot get conclusive evidence that there are no more dimensions. We can only say that everything we have observed so far can be explained satisfactorily with laws assuming only three spatial dimensions.

If the basic assumption is true, the conclusion that follows through deducibility would also be true. If the assumption is false, or built upon false premises, the conclusion that follows would also be false. However, the rules of deducing a true case from the basic assumption should be valid. There are cases where propositions are true, but it may not be possible to deduce a specific case, as each of the proposition may stand independently as a true state of affair.

The assumption can never be proved complete (eg. three dimensional world and infinity of observations related to certain natural phenomena).

5.5.2 Sharing of Knowledge and its Growth

That human knowledge presents many problems is evident even to the least reflective man of 'common sense'. Man discovers through his experiences, reexamines the knowledge when in doubt, discards his theory in the advent of new ideas and theories and so on. Man has over millennia objectified the various conceptual schemata acquired through the experienced knowledge and progressively developed these and shared them through explanation. The brilliant results of nineteenth century science which brought forth the machine, the locomotive, the radio, television, radar and release of atomic energy, all made an epistemology along empirical lines, examined by men like Max Planck, Albert Einstein, Werner Heisenberg, Bertrand Russell and others. Sigmund Freud showed that unconscious factors dominated thought and thinking. Karl Marx showed that society and economic conditions direct the thought of society's members. Man's interaction with physical and human phenomenon around through using different sources has resulted in different forms of knowledge as cited above.

The distinctions between the various forms of knowledge, which principally govern the scheme of education, are based entirely on the analysis of their conceptual, logical and methodological features. The forms of knowledge contribute in their own way to cognitive and moral understanding, thereby resulting in development of all human aspects.

5.6 LET US SUM UP

Epistemology is that branch of philosophy, which deals with theories, sources, and the validity of knowledge. Knowledge is expressed in the form of propositions. In order to know a proposition is true, one must know the words involved in the propositions and the concepts underlying the words. There are certain requirements for knowing a proposition, that is, a) the p must be true, b) we believe that p is true and c) there is evidence or reason to believe p. Knowledge is categorized broadly into three divisions depending upon the ways it is obtained. They are a) A priori knowledge, b) A posteriori knowledge and c) Experienced knowledge.

There are six theories of knowledge based on the sources of knowing sense experience, reason, authority, intuition, faith and revelation. Among these, the knowledge through sense experience and reasoning were considered to be the most reliable sources of knowledge.

The knowledge that is accumulated through man's different ways of knowing consists of various concepts and facts, related to physical phenomenon and human been evolved through continuous observation of natural events in life. True knowledge provides for its own interpretation, verification and explanation. The laws and theories provide explanation of occurrences in nature. Explanations form a hierarchy where the facts on the lowest level are explained by theories, and each theory in turn is explained by the theories on a higher level in a logical manner. Verifiability and confirmability criterion is applied to test the knowledge for its validity. Knowledge with its distinctive features of concepts, facts, generalizations, laws and theories get structured in different forms of knowledge (a-priori, a-posteriori and personal knowledge) under different disciplines. This has great implication to curriculum planning and unders.anding of the methods and domain of a discipline.

5.7 UNIT-END ACTIVITIES

1. Analyse the primary school curriculum and identify examples of a priori knowledge and a posteriori knowledge.
2. Analyse the secondary school curriculum and identify the contents where theories have been explained. Find out the assumptions behind those theories.
3. Give some examples from secondary school curriculum where verification, confirmation and refutation can be used to validate knowledge.

5.8 POINTS FOR DISCUSSION

1. How is the structure of knowledge and its sources useful for a classroom teacher?
2. Implications of structure of knowledge and its different forms to curriculum planning.

5.9 SUGGESTED READINGS

Hospers, J. (1973): *An Introduction to Philosophical Analysis,* (Revised edition), Prentice Hall Inc., Englewood Cliffs: N.J.

Kemeney, G.J. (1959): *A Philosopher Looks at Science*, Princeton: D.Van Nostrand Company Inc.

5.10 ANSWERS TO CHECK YOUR PROGRESS

1. a) This is an empirical statement. To know the truth or falsity of this statement one can observe for oneself using the sense experiences and ascertain whether iron conducts heat and electricity or not.

   b) This proposition indicates the inner state of a person who is undergoing a feeling of 'anxiousness'. This cannot be observed directly as there is no direct empirical object concerning anxiety. But one can still understand the anxiety 'which is in 'occurant' state that is manifested indirectly through facial expressions and movements.

   c) Where there is smoke, there is fire – this proposition can be tested through deductive reasoning. This proposition forms the major premise from which the logic of the argument leads to a specific conclusion.

   Where there is smoke, there is fire (major premise). This mountain has smoke (minor premise). Therefore there is fire on the mountain (conclusion). The conclusion can be verified through sense experience also.

d) I feel that God Exists – This proposition does not yield to either sensory experience or reasoning. It is a feeling state like 'belief'.

e) The weather will be hot tomorrow – This proposition is intuitive in nature, which does not yield to immediate verification. One has to wait till tomorrow to know about the weather condition.

2. 'a' and 'd' may be considered as they are proposed by knowledge authorities in the field.

3. a) Reasoning - But the knowledge expressed in the example is not a valid truth. It lacks valid argument even.

   b) Reasoning - Inductive in nature.

4. a, b, c, d are laws of nature, as it has been observed since millions of years that the occurrences have never failed to be so.

5. 'a' and 'c' are the questions asking for Reason.

   'b' and 'd' are the questions asking for Explanation.

6. Knowledge is validated though the process of verification, confirmation and refutation.

7. Assumption means taking for granted the truth of a proposition for the sake of argument. For example, the law of nature is continuous.

UNIT 6 ANCIENT INDIAN CONCEPT AND NATURE OF KNOWLEDGE

Structure

6.1 Introduction

6.2 Objectives

6.3 Materialism: Orthodox and Heterodox Philosophical Views of Knowledge

6.4 Pramana (Source of Knowledge – Nyaya)

6.4.1 Number of Pramana

6.5 Theory of Knowledge: Issues Raised

6.6 Concept and Nature of Knowledge – Gyana Yoga

6.6.1 Gyana Yoga

6.6.2 The Jain Theory of Judgement

6.6.3 Buddhist Theory of Causation

6.7 Common Features of the Ancient Theory of Knowledge and its Relevance and Implications for Education

6.8 Pramanas and their Implications for Education

6.9 Let Us Sum Up

6.10 Unit-end Activities

6.11 Points for Discussion

6.12 Suggested Readings

6.13 Answers to Check Your Progress

6.1 INTRODUCTION

Philosophy is, in general, an interpretation of man and nature and its basis lies in the analysis, assessment and exposition of the process of knowledge. The word for philosophy in Sanskrit, viz., Darsanam, denotes that it is the science of 'thinking-consideration' - 'vicârasâstram'. Its contents are not mere speculation in regard to the duties of man or the varieties of life.

In India, there are six orthodox schools of philosophy which recognize the authority of Vedas as divine revelation. Those who did not recognize this authority were the Jains, Buddhists (heterodox) and materialists. The question of knowledge, its sources, validity and their trueness were discussed by these different schools of philosophy in great length.

Epistemology as a branch of philosophy centers around questions like 'What is knowledge?', 'What are the different sources of knowledge?', 'What is truth?', 'What is valid knowledge?', 'Is knowing different from knowledge?' and so on. Many more questions of this kind that are related to knowledge have been addressed by both orthodox and heterodox schools of philosophy.

There is much divergence of opinion among Indian philosophers concerning the nature and scope of Pramâna (source of knowledge). The number of Pramânas also is a topic on which wide differences of view exist among the schools. Most Indian Logicians, however, agree to accept three of them – perception (Pratyaksa), inference (Anumâna) and verbal testimony (Sabda) among the six pramânas. We shall discuss them in sequel: the epistemological considerations of materialists, orthodox and heterodox schools of philosophy and the validity of knowledge according to each school and their educational implications.

6.2 OBJECTIVES

After going through this unit, you should be able to:

- explain different Pramanas;
- differentiate between the theories of knowledge of orthodox and heterodox schools of philosophy;
- explain the interpretations of anumâna by different schools;
- identify the valid source of knowledge;
- relate the theory of causation to theory of momentariness;
- state the limitations of theory of knowledge propounded by châryaka school of philosophy;
- explain Syadvâda as the theory of judgement; and
- draw implications to education from different theories and sources of knowledge.

6. 3 MATERIALISM: ORTHODOX AND HETERODOX PHILOSOPHICAL VIEWS OF KNOWLEDGE

Two main areas of discussion about epistemology existed in the Classical and Medieval periods. The schools differed over the number of Pramanas, sources or bases of knowledge in spite of their contributions to a great extent to Indian Epistemology.

Indian Philosophy divides itself into three periods (1) the Vedic period, (2) the Upanishadic period and (3) the post-Vedic period. The post-Vedic period is a systematic period which saw the development of the so-called orthodox systems. Of the systems of thought or darsanas, six became more famous than others, viz. Gautama's Nyaya, Kânada's Vaisésika, Kapila's Sâmkhya, Patânjali's Yoga, Jamini's Pûrva Mimamsa and Badarayana's Uttara Mimâmsa or the Vedânta. They are the Brahmanical systems, since they all accept the authority of the Vedas. These schools valued the spiritual experience as great when compared to intellectual reason. Those who did not recognize the Vedas were the Jains, Buddhists and Materialists.

The epistemological views of these different schools are discussed under separate sections in this module.

Châryâka Materialist School's Views of Knowledge

Even in India, where spiritual ideas dominate the culture, there were some who were skeptical of those ideals and held to a materialist view of the world, they were called Châryâka, and their doctrine that this world is all that exists is called Lokayata.

The materialists did not believe in an after life and found sense perception to be the only source of knowledge, denying the validity of inference or general concepts. They focused on the senses and the four traditional elements of earth, water, fire and air. Consciousness for the Charvaka is only a modification of these elements in the body.

The epistemological doctrine of the Châryâka school (materialism) is that perception (Pratyaksa) is the only means of valid knowledge. The validity of inference is also rejected. Inference is said to be a mere leap in the dark. According to this School, we proceed here from the known to the unknown and there is no certainty in this, though some inferences may turn out to be accidentally true. Induction is uncertain, and deduction is argument in a circle. The crude Châryâka position in this regard has been vehemently criticized by all systems of Indian philosophy all of which have maintained the validity of at least perception and inference.

Orthodox Views of Knowledge

The Nyâyâ and Vaishesika schools are primarily analytic and are therefore, more concerned with logic and epistemology than ethics.

a) The Nyâyâ School: It was formed about the 4th Century B.C. with the Nyaya Sutras by Gautama. According to this school, knowledge comes from perception, inference, comparison and verbal testimony. Objects of learning are self, body, sense organs, sense objects, intellect, mind and activity.

The Nyâyâ system of Philosophy is a system of atomistic pluralism and logical realism. It is allied to the Vaishessika systems, which developed metaphysics and ontology. The Nyâyâ Philosophy was developed by the orthodox Indian thinkers to invent a science of knowledge (Pramânâsâstra) sufficiently effective to fortify their arguments against unorthodox opponents. Consequently, the Naiyâyikas have gone in the history of Indian thought as highly original epistemologists and logicians. It is seen that the Nyâyâ system has explored remarkably the domain of cognitive consciousness and determined the process by which it enters into a connection with the world of physical objects.

Nyâyâ mentions four sources or Pramânas of knowledge: Perception (Pratyaksa), inference (Anumâna), comparison (Upamâna) and the Vedic word (Œabda). Nyâyâ argues that the outside world is known to us through the senses and the mind. It believes in the external things as reflecting their real nature when knowledge is true, and their unreal nature when knowledge is false. Consequently, for the Naiyâyikas, knowledge is the knowledge of things, and it constitutes the expression of reality (arthânubhava). Whatever its type, it is a natural response to the disposition present in human mind.

b) The Vaishesika philosophy: It is considered to be the oldest of the six orthodox schools. The Vaishesika sutras by Kannada were written shortly before Gautama's Nyâya Sutras. The word Vishesa means particularity, and this philosophy emphasizes the significance of individuals. It recognizes three objects of experience as having real objective existence, namely substance, quality and activity, and three products of intellectual discrimination, which are generality, particularity and combination. Like the Nyaya School, this School also acknowledges perception, inference, comparison and verbal testimony as the valid sources of knowledge.

c) Mimâmsâ

Let us now consider the nature of knowledge according to Mimâmsâ. The word Mimâmsâ literally means 'revered thought' and was originally applied to the interpretation of the Vedic rituals, which commanded highest reverence. The Mimamsa philosophy is also very ancient, and the Mimâmsa Sutra by Jamini was written about the 4th century B.C. According to this School, a cognition, which apprehends an object, cannot be intrinsically invalid. Memory arises from the impression of a priori cognition and therefore, cannot be treated as valid knowledge.

Kumârila defines valid knowledge as apprehension of an ob ct which is produced by causes free from defects and which is not contradicted by subsequent knowledge. A valid cognition must fulfill four conditions:

1. It must not arise from defective causes (kâranadosarihita).
2. It must be free from contradiction. It must be self-consistent and should not be set aside by subsequent knowledge (bâdhakajnâna - rahita).
3. It must apprehend an object which has not already been apprehended. Novelty is a essential feature of knowledge (agrhitagrahi). Memory is excluded from valid knowledge.
4. It must truly represent the object (yathârtha).

The Mimâmsa upholds a theory that all knowledge is valid by itself. It is not validated by any other knowledge. Validity of knowledge arises from the essential nature of the causes of knowledge. It is not due to any extraneous conditions.

A need for explanation is felt only when knowledge fails to be valid. And its invalidity is inferred either from some defect in the instrument of knowledge or from a subsequent contradicting knowledge. If a rope is mistaken for a snake, the knowledge of the rope snake is invalidated by the subsequent knowledge of the rope. Though the invalidity of knowledge is inferred, yet knowledge itself is intrinsically presumed to be valid. Its validity is not subject to inference. Truth is normal; error is abnormal. Belief is natural; disbelief is an exception. The Mimâmsâ advocates the self-validity of knowledge both in respect of its origin (Utpatti) and ascertainment (jnapti).

According to Badrayana, (Uttara Mimâmsa and Vedanta) knowledge comes from the scriptures (Sruti) and other authorities (Smriti) though Sruti as revelation is identified with perception and Smriti as interpretation with inference. Scripture refers to the Vedas and Smriti to the Bhagavad Gita, Mahabharata and Laws of Manu. Reason, for Badarayana, must confirm to the Vedas, but it is nonetheless subordinate to intuitive knowledge, which can come from devotion and meditation. According to Sâmkya, both the validity (Pramânya) and the invalidity (Aprâmânyâ) of knowledge are self-evident. According to Nyâyâ-Vaishesika, both the validity and the invalidity of knowledge are due to extraneous conditions. According to Mimâmsâ, knowledge is intrinsically valid, though its invalidity is due to extraneous conditions. The Sâmkhya-yoga School maintains that both validity and invalidity are alike intrinsic to knowledge and this predicates opposite characters of it. It bases this view upon the postulate viz. that whatever manifests itself at any time has all along been latent there.

Heterodox School's Views of Knowledge

Jainism and Buddhism are considered as heterodox schools of philosophy as they did not recognize the authority of Vedas as the orthodox system of philosophy.

Jainism classifies knowledge into immediate (Aparoksa) and mediate (Paroksa). Immediate knowledge is further divided into Avadhi, Manahparyâya and Kevala; and mediate knowledge into Mati and Shruta. Knowledge may again be divided into two kinds - Pramâna or knowledge of a thing as it is, and Naya or knowledge of a thing in its relation. Naya means a standpoint of thought from which we make a statement about a thing. All truth is relative to our standpoint. Partial knowledge of one of the innumerable aspects of a thing is called 'naya'. There are seven 'nayas' of which first four are called 'Artha-naya', because they relate to objects or meanings and the last three are called 'shabda-naya' because they relate to words. When taken as absolute, a 'naya' becomes a fallacy - nayâbhâsa.

Some of the most forceful critics of the epistemologists of the Nyâyâ and Mimâmsâ schools figured between the 4th and 9th Century A D in the Buddhist sect of Svantra – Vijnânavâdins. The Buddhist idealists (Vijnânavâdine) used various arguments to show that perception does not yield knowledge of external objects distinct from the percipient.

a) First, the experience of a dataum and the datum itself occur simultaneously, but two supposedly different events occurring simultaneously cannot be distinguished and should be treated as identical.

b) Second, the external world supposedly consists of a number of different objects, but they can be known as different only because there are different sorts of experiences of them. Yet if the experiences are thus distinguishable, there is no need to hold the superfluous hypothesis of external objects.

c) Third, sense organs supposedly mediate between external objects and consciousness. For example, sensory experience during dreams, where it is feasible

to explain the existence of sensations as due to the inner workings of consciousness. The absolute evolves itself in a way, which makes individuals think that there is an external world. Through the debates they carried on with the realist Naiyâyikas and Mimâmsikas, the Svatantra - Vijnânavâdins have tried to prove that both knowledge by perception and knowledge by inference reflect only 'moments' of existence, i.e. something eternally moving, something so fleeting that it is as if buoyed on an infinite expanse of nothingness. According to this School, no thing or idea can be and yet not-be in consciousness; nothing can exist and yet be not known. Material things are therefore, constellations of sensations, ideas or impressions, emerging as 'moments' of experience like points along the stream of some amorphous stuff. And just as things are along a flow, the consciousness that perceives them is in a flow too. The issues like, "If nothing in the field of our experience is really permanent or self-identical, how could we define an object," " Where does an object exist?" were addressed in this School.

Such questions were of great significance to the Vijnânavâdin. According to them, when an object is perceived or an impression is thought of, consciousness projects itself in the form of something positively "there outside".

The subjectivist theories of the Vijnânavâdins and of the Svatantra - vynânavâda, therefore, that all things are mental constructions, indicate the quest for inward concentration in Buddhism. The theory states that consciousness constructs the world and is deceived by the construction that it falls into a realm of fantasy and believes it to be truly "there" and what is Svachitta or "of one's own mind" is mistaken for being external to the mind. It is a universal deception, a mâyâ (illusion). And as long as this deception keeps the consciousness in bondage, no freedom is possible.

On the whole, it is seen that Buddhism admits perception and inference as the valid source of knowledge. While Nyâya affirms invariable concomitance between two things in inference (where there is smoke, there is fire), Buddhism pleads for causal relationship between two things. According to Nyâya, we can argue from effects to cause but Buddhism, admitting this, emphasizes that we can also argue from 'things' to 'things signified'.

So we see there is much of divergence of opinion among Indian thinkers relating to the nature of knowledge and the sources of knowledge.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of the unit.

1. What is the basic difference between the orthodox and the heterodox philosophical views of knowledge?

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2. What are the six orthodox systems of thought?

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3. What is the difference between Nyaya and Buddhism with regard to inference as a source of knowledge?

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The sources of knowledge recognized by heterodox and orthodox schools are discussed in the following section.

6.4 PRAMÂNA (SOURCE OF KNOWLEDGE – NYÂYÂ)

Pramâna is defined as a source or means of valid apprehension (Pramâ). There are four different forms of valid apprehension (yathârtha anubhava), namely - perception, inference, analogy and verbal testimony. Vâtsyâyana defines a Pramâna as a source or means of valid knowledge. According to the Nyâya School, a causal relation is discerned and ascertained between Pramâ and pramâna on the basis of uniform agreement in presence and absence between the two. The former cannot arise without the latter and hence it is maintained that the latter is the source or cause of the former. The general definition of pramâna is suggested by the etymological meaning of the word itself. The word is derived by adding the suffix 'lyut' in the instrumental (karana) to the root 'mâ' with the prefix 'pra'. The root 'mâ' with the prefix 'pra' means to know rightly.

Valid knowledge (Pramâ) is of two kinds - anubhava (presentative and smriti (representative or remembrance). The latter is the reproduction of a past perception. It is produced by the revival of an impression of an object previously known, and hence the instrument of remembrance cannot be accepted as an independent Pramâna - it is a form of invalid knowledge.

Anubhava or presentative knowledge is divided into Yathârtha or real or Ayathârtha or unreal. Of the two, the former is sound or valid (pramâ) as it exactly corresponds to the object really or it cognizes an attribute as belonging to an object which it really has. Such a valid form of knowledge needs a Pramâna or an instrument. Thus the knower (pramâtâ) and the object known (prameya), too, are causes of valid knowledge (pramâ). These are not considered as pramâna, because these are not instruments or the most efficacious ones of the causes of valid knowledge. According to the Nyâya school, there are four forms of such valid knowledge, namely - Pratyaksa (perception), Anumâna (inference), Upamâna (knowledge derived through similarity) and Sabda (verbal testimony).

The Nyâya school defines pramâna as karana the instrument of valid knowledge. What is an instrument and how it is constituted? As stated already, a karana is distinct from Kârana. A kârana is a cause, but any and every kârana is not karana or instrument. Only the most efficacious (sâdhakatama) of all the causes is called karana or an instrument A cause, according to the Nyâya school, is an invariable, immediate and indispensable antecedent of an effect.

Valid knowledge, according to Nyâya, is a definite and assured cognition of an object. Doubt (samsaya), on the other hand, is the cognition of conflicting notions with regard to the same object. It arises when with regard to some perceived object; there is the suggestion of some conflicting alternatives, e.g., post and man. It is an incomplete or indecisive knowledge. It arrests all activities for the moment.

6.4.1 Number of Pramâna

The different schools of Indian philosophy are not unanimous on the number of means of knowledge. The Chârvâka School recognizes only one source of knowledge, viz. perception (pratyaksa). The Buddhist school recognizes two sources viz. perception and inference (anumâna). The Sâmkhya School recognizes three sources, viz. perception, inference and verbal testimony (sabda). The Nyâya School recognizes four, viz. perception, inference, verbal testimony and analogy (upamâna). The Prabhâkara School of Mîmâmsâ recognizes five, viz. the above four and presumption (arthâpatti). The Bhatta School of mimâmsa recognizes six, viz. the above five and non-existence (anupalabdhi). The Paurânikas recognizes these six sources and in addition, recognize necessary inclusion (Sambhava) and traditional hearsay (Aitihya) as the seventh and the eighth pramânas.

The leading exponents of Indian Philosophy are unanimous on discarding the last two, sambhava and aitihya. Sambhava, according to majority opinion, which enables one to be sure of fifty when hundred are guaranteed, is nothing more than an immediate inference. Aitihya, which consists of traditional hearsays like a spirit dwells in this banyan tree, is no pramâna at all until it is verified and when verified, it comes under verbal testimony. The Naiyâyikas firmly hold that there are four kinds of object of knowledge that are known by four distinct sources. Other sources of knowledge accepted by the Mimâmsâ schools are either included in these four or are redundant.

i) Pratyaksa (Perception)

The word 'aksa' in Pratyaksa means the sense-organ and the word 'prati' means each of all the sense organs and as such the word means the function of each of the sense-organs in respect of its appropriate object. In view of its etymological meaning; the old school of the Nyâya defines perception in terms of sense object contact. Perception is a valid form of knowledge produced by the contact of an object with a sense organ. This means that perception is conditioned in its origin by the operation of the senses. In other words, the knowledge arises by contact of sense organs (indriya) with an object. Such contact is not the sole condition of perception, but it is its distinctive feature or extraordinary cause (karana) of perception. The actual process involved in perception is described thus : The self comes into contact with mind (manas); the manas with the senses and the senses with the object. The function of a sense organ in respect to its own object is described in two ways.

According to Vâtsyâyana, the senses may function to bring about a contact of itself with the object. Here the function is of the nature of contact, which brings about the cognition of the object. Secondly, the function may be of the nature of knowledge. Here the function consists in sense-cognition, which results in a judgement of the cognized object as desirable or undesirable or neither. But the function of the sense, either of the nature of contact or knowledge, is conditioned by sense-object contact. Hence the latter is called the instrumental cause of perception, as it immediately gives rise to the perceptual knowledge of that particular object. Taking sense-object contact to be an instrument of perception, Gautama defines it as follows: "It is a valid cognition which arises through sense-organ coming into relation with object and which is non-verbal, unerring and of the nature of indubious knowledge".

The modern school of Nyâya gives a new definition of perception. Visvanâtha defines it as: Direct or immediate cognition that is not derived through the instrumentality of any other cognition. Perception, according to modern school, is characterized by immediacy (sâksatkâritvam) which is common to all perceptions. It applies to all cases of perception, human or divine. All human perceptions are characterized by immediacy alike. Even God's omniscience has the highest degree of immediacy conceivable. Therefore, according to the modern school, it is direct or immediate knowledge, not derived through the medium of some other knowledge. It excludes inference, which

is produced through the instrumentality of the knowledge of universal relation. It excludes analogy, which is produced through the instrumentality of the knowledge of similarity, verbal testimony that is produced through the instrumentality of the knowledge of words. It also excludes memory, which is produced through the instrumentality of previous apprehension.

ii) Anumana (Inference- Nyâyâ)

Etymologically the word 'Anumana' indicates after knowledge (anu - after, mâna - knowledge) and it follows perception. Gautama defines it as a specific form of knowledge preceded by perception. The perception of the invariable relation between the proban (linga) and the probandum (lingî) is a previous perception of such a relation somewhere else. Again, there is a perception of the proban as invariably related to probandum as it exists in the locus. Inference is defined as the knowledge of an object (lingî) due to a previous knowledge of some sign or mark (linga). The process of inference is explained as follows : A man first perceives smoke (linga) as invarably related to fire in a place like the kitchen. This is the first perception of the proban. Such a perception results in the reminiscent impression that smoke is pervaded by fire. Later on, the man perceives similar smoke in some other place like a hill. The second perception of the mark revives the reminiscent impression leading to the recollection that smoke is "preceded?" by fire. The recollection in turn, is followed by a further perception of smoke not simply as smoke but as the smoke, which is invariably related to fire and exists in the hill. This is the last and the third perception of the mark. This is followed immediately by the inferential knowledge of fire. The third perception of the mark is the immediate cause (karana) of inference and is therefore, called the instrument (anumâna - pramâna).

Constituents of Inference: From the definition of inference, it follows that there must not be less than three terms in any inference. There are Paksa (hill), Sâdhya (lingî) and the Linga (hetu) which correspond respectively to the minor, the major and the middle terms in western syllogism.

The Paksa (locus) - It is the subject under consideration or the substratum possessing the Sâdhya (probandum) and the linga (proban). For instance, the hill is the paksa in which smoke is perceived and fire is inferred.

The Sâdhya (probandum) - It is the object of inference or that which we want to prove by means of inference. It is also called 'Gamya' because it is known with the help of 'Gamaka' (mark) or Lingin (possessor of linga). The Linga (mark) - It is the reason of inference. It is also called 'Gamaka' because it is the indicator or hetu because it serves as mark or Sâdhanâ because it the means of proving something (Characteristics of valid reason).

iii) Sabda (Verbal Testimony - Nyâyâ)

Sabda literally means verbal knowledge because by it, the meaning is verbally communicated. It consists in the knowledge of objects derived from words or sentences. Words or sentences constitute verbal statements. However, all verbal statements are not valid. Hence Gautama defines Sabda Pramâna as the statement of a reliable person. In other words, verbal testimony is the communication from a trustworthy person. Who is the trustworthy person (Âpta) and why is assertion (upadesa) is a testimony (pramâna)? 'Âpti' is the one who possesses it. An Âpta or a trustworthy person is the speaker who has the direct knowledge of an object and is motivated by the desire of communicating the object as directly known by him. Hence a verbal statement is valid when it comes from a trustworthy person who knows the truth and speaks the truth without anything for the guidance of others. In other words, the validity of verbal statements is based on the reliability of a person making a statement. But the possibility of verbal testimony depends on understanding the meaning of a statement. Unless the meaning of a valid statement is properly understood, there cannot be a true

comprehension of the object meant. Therefore, Sabda as a pramâna consists in understanding the meaning of the sentences or the assertion made by the reliable person. Analysing the process of verbal testimony we get the following steps:

First, there is the perception of the words of a sentence uttered by the trustworthy person. Second, there is the understanding of the meaning of words. This is called the Karana or the special cause of the verbal knowledge. The knowledge of words (padajnâna) leads to the knowledge of objects through the function (vyâpâra) of recalling the meaning of words.

There are two ways in which all verbal knowledge has been classified according to the Nyâya school. According to Gautama and Vâtsyâyana, verbal knowledge is of two kinds, viz. 'Drstârtha' or one relating to perceptible objects and 'Adrstârtha' or that relating to imperceptible objects. The former is limited to the sensible object attainable in this world while the latter relates to super-sensible object, which is attainable to the other world. This is the division of words of the ordinary persons and the seers. According to later logicians, there are two kinds of verbal testimony viz. Vaidika or the scriptural and Laukika or the secular. The former relates to the words of God. The Vedas are created by God and therefore, valid perfectly. The latter relates to the words of trustworthy persons and may, therefore, be true or false. In other words, scriptural testimony is the statement of the Vedas while secular testimony is the statement of human beings.

Upamana (Comparison)

Upamâna or Comparison is the knowledge of the relation between a name and thing so named on the basis of given description of their similarity to some familiar object. For example, when we tell a city man that a wild cow is an animal like a cow and later on, in a forest, when he sees a wild cow he recognizes it as the wild cow. Then his knowledge of the wild cow is the outcome of conjunction with the knowledge of the cow. Hence the upamâna is just the knowledge of the relation between a name (here it is the wild cow and the object denoted by that name (the actual wild cow seen in the forest).

iv) Arthapatti (Presumption – Mimâmsa)

It is an independent source of knowledge according to Kumârila Bhatta and Prabhâkara. Both admit it as a distinct pramâna which cannot be brought under anumâna or sabda. It consists in the assumption of some unperceived fact in order to explain apparently inconsistent facts. The stock example of presumption is set forth thus: Devadatta is alive and he is not present in his house, we presume that he is elsewhere. The essential element in presumption is that a certain fact like Devadatta's 'being alive' and 'not being present in his house' is unaccountable without presuming another fact like being outside his house. In presumption, we proceed from the knowledge of something to be explained to the knowledge of that which explains it. The means of presumption (karana) is the knowledge of the inner contradiction (anupatti) and its result is the reconciliation of the contradiction (upapatti). If Devadatta is fat and he does not eat during day, we presume that he must be eating during night, otherwise the inconsistency between 'being fat' and 'not eating during day' cannot be resolved.

v) Anupalabdhi (Non-apprehension – Mimâmsa)

According to Kumârila Bhatta and others, non-apprehension is the sixth independent source of knowledge. It consists in the presentative knowledge of negative facts. In other words, negative facts are cognized by a special instrument (karana) called non-apprehension. Only positive facts are apprehended through positive sources like perception, inference, etc. but negative facts are apprehended through non-apprehension i.e., the absence of the jar on the ground is apprehended through anupalabdhi.

Kumârila argues that the concept of the emptiness of the container inevitably presupposes non-existence. He also refutes the Nyâya view that non-apprehension is the same as perception or inference. Negation is never perceived, for there is no sense-object contact in it. Our senses function only in the cognition of the ground, but we do not perceive the non-existence of the jar. It is also not reasonable to hold that the absence of the jar is a qualification and the ground is the qualified object. It is not possible to perceive the qualified object without perceiving the qualification. Negation cannot be inferred also for the invariable relation is not known there. Hence Kumârila concludes that non-existence is a distinct category which is cognized by non-apprehension only.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of the unit.

4. What are the sources of knowledge according to Indian philosophy?

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5. Difference between Vaidika and Laukika verbal testimony.

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6. What does Anupalabdhi (Non-apprehension) emphasize?

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6.5 THEORY OF KNOWLEDGE: ISSUES RAISED

Indian philosophy had its start in an inquiry about the nature of man himself, and the nature of universe is known only as part of the understanding of man's own nature. The question of knowledge cannot be dissociated from the way of knowing. What is wanted is not mere knowing, but correct knowing, and there arises the need for a test of the knowledge whether it is correct or false. As we have seen in the preceding sections, there have been various schools of thought in India that have held different views about the ways of knowing and the tests for the correctness of the knowledge. In this section, some of the issues raised regarding the theories of knowledge by different schools are discussed.

As we have seen in the preceding sections, Châr vâka's theory of knowledge is a thorough-going ***positivism***, wherein the reality of whatever we perceive is accepted and those that cannot be perceived is rejected, ***perception*** as the only source of valid knowledge is accepted and the validity of inference is rejected.

According to Châryâkas, the major premise of an inference cannot be proved and so its validity cannot be accepted. Some of the questions raised regarding the classical example of inference are as follows:

a) How can we formulate the major premise unless we have seen all the instances of smoke? If we have not examined all the instances, how can we be logically justifiable in using the word "wherever"?

b) If we have seen all the cases in which smoke and fire are present together, we must have seen the present case, viz. the mountain also. Then what is the use of making an inference of fire from smoke when we have already perceived the fire in the mountain?

c) Inference is made possible by universal relation (vyâpti) obtaining between two facts or events.

d) The principle of causation is rejected, because it is not supported by sense perception.

   (i) The Châryâkâ challenges the universal and invariable relation, as it is a mere guess work and lacks certitude. The universal relation involves infinite regress. Neither verbal testimony nor compassion are capable of establishing universal relation.

   (ii) The uniformities of experiences is also rejected. (For example, Is not fire hot always? Is not ice cold always?) Uniformities in nature prove the universal relationship between two things. They say that it is due to inherent nature or Svabhâva of things that they possess certain characteristics.

   (iii) According to Châryâkâs, verbal testimony consists of spoken words which are heard through our ears. Since words suggest or mean things, but actually do not give us direct apprehension of the objects, they are not free from error.

Like the Châryâkâs, the Buddhists also took up a position that the only way of correct knowing is through *perception*. They accepted natural deductions from direct perception also as a way of correct knowing like Charvâkâs. But they differentiated between direct perception and inference as two distinct modes of knowing. The difference is, when some invariable concomitance is established between two events by direct perception, and then through such concomitance, we can infer the presence of one of them when the other is present. But Buddhism restricted the possibilities of such concomitance to the relation of cause and effect and the relation of the general and the particular. Thus if there is fire, we can infer that there is heat and when there is heat, we can infer that there is fire. There can be no establishment of such a concomitance between two events, one of which is absolutely outside the sphere of direct perception and as such they do not recognize things that can only be inferred, they do recognize any other mode of knowing also. For this reason, like the Châryâkâs, they reject things like an enduring soul and the efficacy of rituals that bring about happiness in another world.

The Châryâkâs and Buddhists were confined in their thought to the category of normal perception and inference. Things falling absolutely outside the sphere of such normal experience had no bearing on the thoughts of Buddhists and Châryâkâs. It is here that there is a real difference between the Vedic and the Buddhist thoughts. Direct perception of the normal type found a place in both and reason of a particular group also found a place in both. But in the Vedic thought there was reason of another group and also direct experience of a super-normal nature.

The Nyâya and the Mimâmsa schools differed in their thoughts about *inference*. Considering Inference (anumâna) as the source of knowledge, the classical example cited in the preceding section is taken here for a discussion.

"There is fire on the hill because there is smoke on it".

Smoke is 'hetu' or 'linga'; the assertion that has been made (the hill in this example) is called paksa and the term fire is called 'Sadhya'. The Nyâya school holds that inference is made because of the invariable association (niyama) of the linga or hetu with sadhya and not because of specific conditions (essential identity, cause and effect). For example, if it is held that the inference that 'it is a tree' because it is a pine is due to the essential identity (tâdâtmya) of tree and pine, then the opposite argument that it is a pine because it is a tree ought to be valid as well; for if it were a case of identity it ought to be the same bothways. The argument from tadut path (association as cause and effect) is also due to invariable association as cause and effect for it explains the case of inference of the type of cause and effect as well as of other types of inference, where the association as cause and effect is not available (eg. from sunset the use of stars is inferred). Now the question arises that since the validity of an inference will depend namely on the validity of the concomitance of sign (hetu) with the signate (sâdya), how are we to assure ourselves in each case that the process of ascertaining the concomitance had been correct and the observation of concomitance had been valid.

The Mimâmsa school held that if we had no knowledge of any such case in which there was smoke but no fire, and if in all cases smoke was perceived when there was fire, one can enunciate the concomitance of smoke with fire. But Nyâya holds that it is not enough that in all cases where there is smoke there should be fire, but it is necessary that in all those cases where there is no fire there should not be any smoke.

Among the intellectual processes employed for the establishment of truth, the formal inference that has been described in the proceeding paragraphs deserves the prominent position. Every theory has to be tested by the rules framed within the scope of this process. But this process does not exhaust the field for the play of the intellect in its quest for truth. There are other modes of knowing things deduced from a knowledge already derived. The essential nature of a formal inference is that there must be universal relation through whose medium such deductions are made. But there are other processes where some schools do not accept the medium of such a universal and they are brought under other forms of general inference bearing other names. What is wanted is that any theory must be based on observed facts, must not go against facts and must conform to some patterns of reasoning.

The most important process that comes within the pattern is what is called *'presumption' (Arthapaths).* The Nyâya – Vaisesika school tries to bring this process also under the pattern of a formal inference with a universal included in it. But in the Mimâmsika school, this is recognized as a distinct and independent process. It brings a large number of cases within our day-to-day experience within this pattern of the process of valid knowledge. One of the examples as cited under source of knowledge is

1. A particular person does not eat by day and is found to continue fat; therefore, he eats at night.
2. A particular person known to be alive, is not in this house; therefore, he is outside.

Here is a process of knowing that is peculiar in nature. It is not a syllogistic inference with its 'universal'. There is no verbal statement either. Still there is knowledge. This is what is technically called presumption (Arthapathi) in Indian logic. We do not always think in terms of syllogistic logic. We think in general terms, but general ideas must rest on some particular and when the particular is sublated, the general preposition cannot stand, for want of a particular to rest on. Therefore, another particular is presumed, to afford the general idea some resting place.

A statement like "there is no jar here," means either that there is something other than a jar here or that the jar is elsewhere. Without one or the other of these two alternatives, a purely negative idea is impossible. Here the process of presumption starts. When one finds that the man whom he was looking for is not at home, there is other possibility

that he may be dead. As a matter of fact, Prabhâkara, the founder of one of the two schools of Mimâmsa, accepts such a stage in the process of 'presumption'. He says that the proposition of the man being outside is resorted to avoid the doubt regarding the other alternative of his being dead. But Kumârila, the founder of Mimâmsa, does not accept this stage. According to Mimâmsa, proposition is resorted to avoid the impossible stage of the mind having a negation as its object. They ask whether, when a valuable property is lost, the owner may resort to such a proposition and entertain the consolation that the property may be elsewhere.

Analogy (upamâna) is another process, which is recognized by all. But there is a difference of opinion whether it should be recognized as a distinct process or whether it may be brought under formal inference. There is also a difference of opinion regarding the final result of this process. Considering the example of a man hearing the name of a wild cow (refer to source of knowledge), the process is not mere perception. If he had seen the a wild bull, without knowing that wild bull is just like a bull, he would not have known that animal is the wild bull. When he simply heard that the wild bull resembles an ordinary bull, then also he did not know what a wild bull is. This is the position taken up in the Nyâya-Vaisesika system. There is a slight difference in the point of view of Mimâmsa. When a man hears the statement that a wild bull is like a bull, he understands that the similarity of a bull exists in a wild bull. When he sees the wild bull later, he understands the similarity of a wild bull as existing in the bull, which he had seen in the village. At the time of seeing the wild bull, he was not seeing the same bull, which is in the village. So the knowledge of the existence of the similarity of the wild bull in the bull cannot be perception, since the bull is not in sight.

The Naiyâyîkas are thorough realists and they do not regard the observation of similarity as being due to any subjective process of the mind. Similarity is indeed perceived by the visual sense but yet the association of the name in accordance with the perception of similarity and the instruction received is a separate act and is called upamâna.

Regarding the ***Sabda pramâna*** or ***testimony***, it is considered that all knowledge derived from Vedas is valid, for the Vedas gave us right knowledge not of itself but they came out as the utterances of the infallible Isvara. The Vaisesikas did not admit Sabda as a separate Pramâna, but they sought to establish the validity of testimony (Sabda) on the strength of inference on the ground of its being the utterance of an infallible person.

What is called 'Authority' is not a special feature of any particular system of thought, either in religion or in philosophy in India. Organized social life demands the recognition of the three modes of knowing, the modes of direct experience, reasoning and authority. All logical thinking also demands the three-fold approach to the problem included within philosophy. When it is generally stated that the Charvâkâs recognized only direct experience, Buddhism included reason within the schemes of modes of knowing, the Vedic schools accept 'Authority' within the scheme of knowing. Direct experience and reasoning fall within one's own authority, while what is called 'Authority' is the authority of another person's experience. This experience of another is communicated through the medium of language. In the Mimâmsa system it is definitely said that the subject matter of the system, namely, Dharma, is what can be known only from scriptural injunction. In the Vedanta also, it is said that the understanding of Brahman, the subject matter of the system has scripture as its source. What is meant by 'Authority' on which the two systems depend for a treatment of the subject matter? The authority may be a set of texts known as the Vedas, or the authority may be a distinct mode of knowing certain realities in the world. The Mimâmsa and the Vedânta lose their claim as philosophy if it is the second alternative, they become super-rationalistic philosophy. In both there is a 'desire to know' what is identical with philosophy.

Regarding the Pramâna, '***Anupalabdhi (Non-apprehension)*** the Naiyâyikas like Kumârila admit that abhâva is a distinct category, but do not believe in non-apprehension as an independent source. According to them, negative facts are known either by

perception or by inferences as the correlate of negation is a subject of perception or inference. In negative judgements such as "there is no jar on the ground", the ground as well as the negation of the presence of the jar are cognized. According to Vaisesika, negation is real, but is not re-cognized by a distinct source. It is cognized by inference. According to them, abhâva gives us the knowledge of such objects, which should have been perceived, if they existed. Abhâva is the non-perception of the object under special circumstance called 'yogayanupalabdhi'. In short, the knowledge of abhâva arises from the non-perception of the apprehensible. Prabhâkara does not admit abhâva as an independent category. He contents that the basis of negative proposition is the mere container, and 'there is no jar on the ground' refers to the empty floor. It is only a description of the form of cognition underlying negative statements and that abhâva is the cognition of the container. Kumarila refutes the above by saying negation cannot be inferred, for the invariable relation is not known here. Philosophically this process has little importance. It plays a very subordinate part in our day-to-day experiences too. It is dealt, within philosophy, only as a fact in the process of knowing and not on account of its importance. The case is quite different with 'presumption' which has as much importance in philosophy as inference itself, if not a greater importance. He concludes saying that non-existence is a distinct category, which is cognized by non-apprehension only.

The above issues raised regarding the source and theory of knowledge in different philosophical systems show us how knowledge has been given importance in our Indian Philosophy. The Nyâya and the Vaisesika realism, and the heterodox schools of subjective idealism have been engaged constantly in the examination of knowledge.

6.6 CONCEPT AND NATURE OF KNOWLEDGE – GYANA YOGA

In this section, the concept and some of the major features of the nature of knowledge according to Gyana Yoga is discussed.

6.6.1 Gyana Yoga

This system of philosophy was founded by Patanjali, which shows the practical path leading to Viveka-jnana of the Sâmkhya. The Yoga Sûtra of Patanjali is the oldest textbook of the yoga school. It has four parts, of which the first explains the nature and aim of Samâdhi, or meditative absorption; the second explains the means of attaining this end, the third gives an account of the supernormal powers that can be attained through the yoga practices, and the fourth sets forth the nature of liberation. Patanjali systematized the conception of the yoga and set them forth on the background of the metaphysics of the Sâmkhya. In the early works, the yoga principles appear along with the Sâmkhya ideas. Yoga is intimately allied to Sâmkya. The Gita calls them one. Yoga means spiritual action and Sâmkya means knowledge; Sâmkya is theory; yoga is practice.

Theory of Knowledge (*Chitta*)

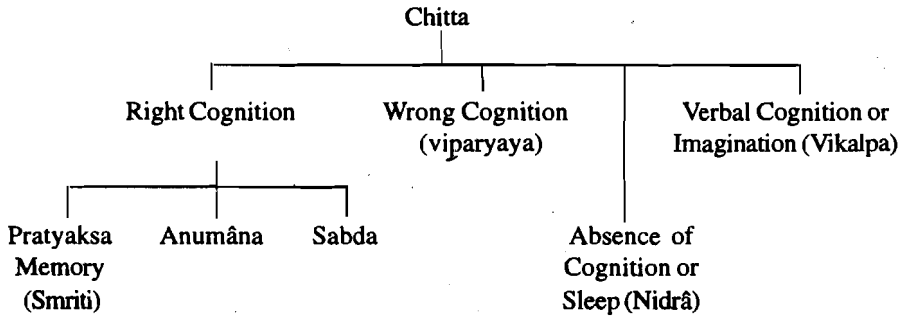
This school lays emphasis on the practice of yoga as a means to the attainment of Vivekâjnâna (the doorway to liberation). Patanjali describes yoga as, "Yogaschittavrttinirodhah". It means the stoppage of the modifications of chitta. Chitta includes buddhi, ahamkâra and manas. Chitta itself is unconscious but it has the power to reflect the Purusa and therefore, appears as if it is conscious. This reflection of Purusa in Chitta is the empirical self. Purusa is essentially pure consciousness. When it wrongly identifies itself with its reflection in the Chitta it appears to be undergoing change and modifications. The cessations of this modification lead to the realization of the true nature of Purusa. The yoga system holds that the cessation of

modifications of Chitta can be attained through meditation or concentration, which is also called yoga.

When through yoga and Viveka-Jnâna the Purusa in us realizes that it is completely separate from and is only a witness of the Prakriti, then Purusa steps into identify itself with its reflection in the Chitta. Thus, the light of consciousness of Purusa is withdrawn from the Chitta when all modifications of the Chitta are stopped through concentration or meditation. Thus yoga can also be said to be the return of Purusa to its original perfection.

According to this system, the modifications of the Chitta are of five kinds.

Kinds of Chitta Modification



Pramâna is called right knowledge as in it (a) Chitta through the sense, comes into direct contact with the external object and assumes its form, or comes into contact with internal mental emotions, here it is called Pratyaksa, (b) or the Chitta cognizes the generic nature of things through inference (anumâna) or (c) Chitta accepts the verbal testimony of a trustworthy man, (Sabda).

Viparyaya is wrong cognition or wrong knowledge e.g. the knowledge like that of a piece of silver is a non-metal.

Vikalpa is imagination like that of a hare's horn which does not exist.

Nidrâ is absence of cognition, but even in it there is mental modification, because after sleep we say, 'I had a sound sleep' and this knowledge can come only through some mental modification, as this is the source of all knowledge.

Smrti or memory is the mental modification through which we recollect the past experiences.

Chittabhumi

Yoga propagates five levels of mental functions or Chittabhumi. The difference in the mental levels or Chittabhumi are due to the predominance of the different gunas in the different Chittabhumis.

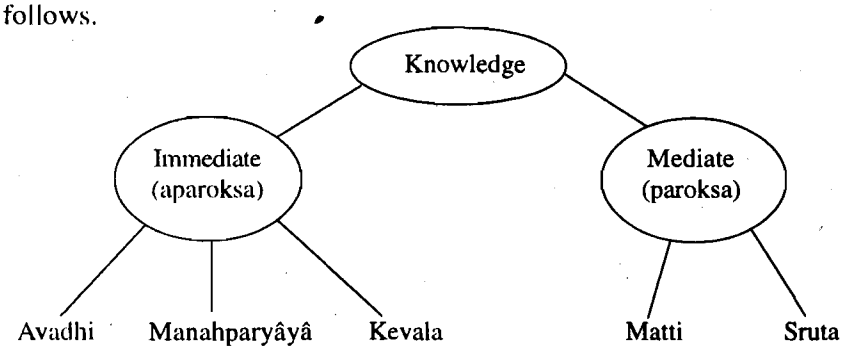
1. The first is the Ksipta Chittabhumi. Here there is excess of Rajas guna. In this state, Chitta is in a dissipated condition and moves from object to object like a shuttlecock.
2. Mudha is a mental condition due to the preponderance of Tamas. Here the mind is in a condition of sleep, ignorance, indifference and lethargy.
3. Viksipta is the mental state where Sattva guna predominates but at times Rajas guna also asserts itself. This is a condition of relatively pacified mind yet at times due to Rajas it gets distracted.
4. Ekâgra is the state of preponderance of Sattva in the mind. This is the state the mind becomes concentrated on the object of concentration or meditation.

5. Niruddha is also a state of the preponderance of Sattva in the mind. This is the highest Chittabhumi. Here the mental modifications are completely arrested, yet their latent impressions or Vâsanâs remain. In this state, due to complete cessation of modifications of the mind there is complete absence of all knowledge including that of the object of meditation.

6.6.2 The Jain Theory of Judgement

The theory of knowledge held by the Jainism is that of common sense realism and pluralism. The theory of Reality is many faced (anetântavâda).

According to this theory, the different kinds of immediate and mediate knowledge that we possess about objects reveal that every object has many characters. Such partial knowledge about any one of the innumerable aspects of an object is called 'Judgement' by Jain. Every judgement that we pass is, therefore, true only in reference to the standpoint occupied and the aspect of the object considered. The standpoint about any object may differ on account of its Svarupa (own form), Svadravya (own matter) Svaksetra, (own place) and Svakâla (own time) and this happens in simple affirmative judgements. Similarly, in simple negative judgements difference may take place because a thing is not in its pararupa (other form), paradravya (other matter), paraksetra (other place), and parakâla (other time). According to Jainism, the knowledge is classified as follows.



1. **Immediate Knowledge**

   i) **Avadhi**: Direct knowledge of things even at a distance of space and time. It is called Avadhi because it functions within the limits of space and time.

   ii) **Manahparyâyâ** is the direct knowledge of the thoughts of others (telepathy) which is limited to space and time conditions. Both Avadhi and Manhaparyâyâ are called extra-sensory form of knowledge, as the soul is unaided by the senses or mind in obtaining direct knowledge.

   iii) **Kevala-jnana** is absolute, extraordinary and infinite knowledge. It is not limited by space, time or object and can be acquired only by liberated souls.

2. **Mediate Knowledge**

   i) **Matti** includes perceptual and inferential knowledge. Pure perception in the sense of mere sensation cannot be knowledge. Sensation to become knowledge must be given meaning and arranged into order by thought.

   ii) **Sruta** means knowledge derived from authority. The instruments of mati and Sruta knowledge are perception, inference and authority.

Knowledge, according to Jainism, may be again divided into two kinds viz. Pramana or knowledge of a thing as it is which is real and complete knowledge. Naya is the knowledge of a thing in its relation. It is relational and partial knowledge. There are seven Nayas which are divided into Artha Naya (related to meanings or objects) and Sabda-Naya (related to words). The Jainas elaborate the doctrine of Naya in order to show that several judgements or propositions may be true about the same object from

different points of view. Even contradictory judgements can be true of the same thing, provided it is admitted that there can be different viewpoints. In short, a partial view of the innumerable aspects of a thing is called a Naya or a standpoint. It influences our judgement and so a judgement based on the partial view is also called Naya.

Therefore, the Jainas say that every judgement (naya) should be qualified by some word like 'somehow' (Syât, i.e. in some respect), so that the limitation of the judgement and the possibility of other alternative judgements from other points of view may always be kept in mind.

The Jaina logic distinguishes seven forms of judgement. Each judgement, being relative, is preceded by the word 'syât'- probable, perhaps, may be etc. The Jaina theory of judgement is called 'SYÂDVÂDA' or Sapta – bhangi – Naya. Sapta - bhangi – naya means the 'theory of seven-fold judgement'.

1. Syâdasti: Relatively, a thing is *real.*
2. Syâdnâsti: Relatively, a thing is *unreal.*
3. Syâdastica nâstica: Relatively, a thing is *both real and unreal.*
4. Syâdavaktavyam: Relatively, a thing is *indescribable.*
5. Sydâsti ca Avaktavyam ca: Relatively, a thing is *real and is indescribable.*
6. Syâdnâsti ca avaktavyam ca: Relatively, a thing is *unreal* and is *indescribable.*
7. Syâdasti ca nâsti ca avaktavyam ca: Relatively, a thing is real, *unreal and indescribable.*

There is no universal and absolute position or negation, and all judgements are valid only conditionally. The relation of the naya doctrine with the Syâdvâda doctrine is that for any judgement according to any and every naya, there are as many alternatives as are indicated by syâdvâda. The validity of such a judgement, is therefore, only conditional. If this is borne in mind when making any judgement according to any naya, the naya is rightly used. If however,the judgements are made absolutely according to any particular naya without any reference to other nayas as required by the Syâdvâda doctrine the nayas are wrongly used as in the case of other systems, and then such judgements are false and should, therefore, be called false nayas (nayâbhâsa).

6.6.3 Buddhist Theory of Causation

The Doctrine of Momentariness and the Doctrine of Effective Causation (Arthakriyâkâritva).

The theory of dependant origination (Pratitya Samutpâda) of things is the spontaneous and universal law of causation, which is known in Buddhism as dharma or dhamma. This view holds that on getting the cause, the effect arises and the existence of everything is conditional. This view according to Buddha is the middle view because it avoids the extreme views namely that there is some eternal reality underlying all things and that all is annihilitated ultimately. The theory of universal change holds that all are in a flux. The doctrine was developed later on and came to be known as the **doctrine of momentariness of things.**

The law of karma holds the view "as you sow, so you reap". The doctrine of momentariness of things not only results in no-self doctrine (Anattâvâda), but it also gives rise to no permanent ultimate reality, spiritual or material. Buddhism holds that the real is that which has capacity to produce some effect. The idea of causal efficiency is, therefore, ***the criterion of existence***. The criterion of existence or being is the performance of certain specific actions; or rather existence means that a certain effect has been produced in some way (casual efficiency). That which has produced such an effect is then called *existent or sat.* Any change in the effect thus produced means a corresponding change of existence.

Buddhism holds that the effects produced in us by objects at different moments of time may be similar but cannot be identical because each moment is associated with a new effect and each new effect thus produced means coming into being of a correspondingly new existence of things. If things were permanent there would be no reason why they should be performing different effects at different points of time. Any difference in the effect produced, whether due to the thing itself or its combination with other accessories, justifies us in asserting that the thing has changed and a new one has come in its place. The existence of a jug for example is known by the power it has upon our minds. If it had no such power then we could not have said that it existed. We can have no notion of the meaning of existence other than the impression a thing produced; this impression is nothing else but the power exerted by things on us. According to the theory of causation, we perceive the power of producing effects and define each unit of such power as amounting to a unit of existence. And as there would be different units of power at different moments, there should also be as many new existences, i.e. existents must be regarded as momentary, existing at each moment that exerts a new power

6. 7 COMMON FEATURES OF THE ANCIENT THEORY OF KNOWLEDGE AND ITS RELEVANCE AND IMPLICATIONS FOR EDUCATION

Though there is a variance between the six orthodox schools regarding the sources of knowledge, it is a well-accepted fact that all schools have acknowledged Pratyaksa, Anumâna and Sabda as valid sources of knowledge. The knowledge through sense experience is considered to be the basic source even in other pramânas for further evidences and validation. The Nyâya School has added upamâna to the list, while Mimâmsa has added Arthâpathi and Anupalâbdhi to the list. The latter two sources have been considered as less valid when compared to other pramâmas.

Considering each of the Pramâna with its merits, let us examine for their relevance and implications for Education.

6.8 PRAMÂNAS AND THEIR IMPLICATIONS FOR EDUCATION

As you must have learnt, education aims at all round development of the child, which includes the development of sensory powers too. Since perception is the chief means of all knowledge, it is imperative on the part of education to aim at physical as well as intellectual development of child's personality.

The Nyâya, being mainly a logical and analytical approach to the world holds that education should aim at sensory and intellectual training. Besides this, the school also aims at developing a good and a balanced life. Both cognitive as well as conative faculties are needed to be developed according to Nyâya's concept of Education. A keen sense of observation and enjoyment therein is the main characteristic of an inquiring student. Since Nyâya's analysis of perception is a foundational concept in the entire Indian system, the emphasis on the refinement of perception also leads to aesthetic values. The development of aesthetic values depends on all aspects of arts, which objectifies our emotions. The Nyâya's concern for meaning through their epistemological doctrine proves that they loved symmetry, proportion, balance and harmony, and this trait can lead to aesthetic values on which depends the growth and development of a great edifice of culture and civilization of humans.

The analytical method used in Nyâya can have relevance to our methods of teaching. In subjects like Mathematics, analysis and synthesis are used which are the dimensions of inference. Problem-centred method can be used in teaching. Analogy (upamâna) is used in all comparative knowledge. Verbal testimony (Sabda) can include seminar, group discussion and lecture method. On the whole, deductive-inductive method, project method, symposium, dialogue and argumentation can be used as effective methods of teaching.

From Vaisesika school, we can draw implications for science. Scientific attitudes can be developed with the proper education embodying all knowledge with reference to the physical laws especially. This school advocates that each field of knowledge concerned with the discovery of hidden laws of nature and man should constitute the curriculum. As Nyâya, Vaisesika also believes in perception as the major source of knowledge. So all deductive methods including dialogue and lecture method should be acceptable. The aim of education according to Samkhya school is to evolve sattvic status of body, sense organs, manas and self-sense, because on these the outgrowth of sattvic intelligence depends. Different skills need to be developed which are based on the proper evolution of sense organs and the organs of actions, which are made of Tammâtras (the quiescence of gross material elements). According to this school, the development of knowledge through sense organs, manas and self sense is aimed at. So the curriculum should be concerned with the knowledge of surrounding elements with which the body is sustained. Since the student in his initial stage must learn the meaning of taste, smell, touch, sound, form, etc. the topics pertaining to soil, water, light, air, etc. must be included in the school curriculum. Since evolution is the main theme of the samkhya system and prakrti in presence of purusa (consciousness) gives rise to divine forms of creation, a child who is an integrated whole of purusa and prakrti has also to evolve physically, mentally, emotionally, intellectually and spirituality.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of the unit.

7. Differentiate between immediate knowledge and mediate knowledge acoording to the Jaina theory of judegment.

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8. What is the theory of causation according to Buddhism?

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9. How do sources of knowledge according to Indian philosophy influence educational practice? Give two examples.

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6.9 LET US SUM UP

Epistemology is that branch of philosophy which investigates the origin, structure, methods and validity of knowledge. The chief aim of Epistemology are: How far can we know reality? How does knowledge originate and develop? Which is the valid source of knowledge? and so on. The different schools of philosophy starting from Vedic times have debated upon several issues of knowledge, their sources and validity. The orthodox schools (six systems of philosophy) and the heterodox schools have contributed to the theories of knowledge.

The Châvaka School which is materialistic recognizes only perception as the valid source of knowledge. The Jaina philosophy believes that consciousness or Jnâna is the inseparable essence of every soul. The knowledge is categorized into immediate and mediate which are perceptual and inferential in nature. The Jain theory of judgment, which is also called Syâdvâda, distinguishes seven forms of judgement. The Buddhist School of Philosophy admits perception and inference as the valid source of knowledge. It also emphasizes upon the causal relationship between two things. It did not believe in Vedic authority for valid knowledge. The theory of dependent origination explained the origin, experience and decay of things through the theory of natural causation.

The orthodox schools (Nyâya, Vaisesika, Samkhya, Yoga, Mimâmsa and Vedânta) differ in their interpretations about knowledge and their sources. The Nyâya school recognized Pramânas like Pratyaksa, Anumâna, Sabda and Upamâna, while Vaisesika also recognized the same pramanas. The Sâmkhya and Yoga philosophy also believed in perception, inference and scriptural testimony. The Mimâmsa school of philosophy adds two more pramana to the above, viz. arthapathi (postulation) and anupalabdhi (non-perception).

The sources of knowledge according to the Vedic schools and heterodox schools have certain relevance and implications for to education – content and methods of teaching which have been discussed in this unit.

6.10 UNIT-END ACTIVITIES

1. Provide some daily life instances where 'upamâna' is used as a source of knowledge.
2. Observe the instructional transaction taking place in different subject areas at the primary, secondary and higher education levels. Find out at least five instances at each level where the following sources of knowledge are used.
   a) Anumana
   b) Sabda
   c) Upamana
   d) Arthapatti
   e) Anupalabdhi

6.11 POINTS FOR DISCUSSION

1. What methods of teaching can be adopted in school education to develop effective sensory perception?
2. How can we develop the skill of inference in students?
3. Explore the ways in which we can train the students in scientific and analytical methods.
4. Identify the Verbal testimony as the source of knowledge and discuss the ways in which knowledge has been communicated.

5. Criticisms of Buddhist school of Philosophy about Vedic schools' viewpoints on knowledge.
6. Is 'Upamâna' relevant to our classroom teaching? In which contexts it is useful?

6.12 SUGGESTED READINGS

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6.13 ANSWERS TO CHECK YOUR PROGRESS

1. The Orthodox Schools of thought accept the authority of the Vedas while viewing the nature of knowledge but the Heterodox Schools of thoughts do not recognize the authority of the Vedas.
2. Nayaya, Vaisesika, Samkhya, Yoga, Purva Mimamsa and Uttara Mimamsa or the Vedanta.
3. The difference between Nayaya and the Buddhism with regard to inference as a source of knowledge is that the former affirms concomitance between two things in inference (When there is rain, there is cloud), while Buddhism argues for causal relationship between two things (There is rain because there is cloud).
4. The sources of knowledge according to Indian philosophy are perception, inference, verbal testimony, analogy, presumption and non-existence.
5. Vaidika or the scriptural verbal testimony is the statement of the Vedas and Laukika or the secular verbal testing is the statement of human beings.
6. Anupalabhi (Non-apprehension) emphasizes knowledge of negative facts. Negative facts are not perceived, for there are no sense-objects contained in them.
7. Immediate knowledge refers to direct knowledge of things while mediate knowledge includes perceptual and inferential knowledge. It also includes knowledge from authority.
8. The theory of causation according to the Buddhism stress that we perceive the power of producing effects and define each unit of such power as amounting to a unit of existence. Hence, any change in the effect thus produced means a corresponding change of existence.
9. The analytical method used in Nyâyâ is applicable to subjects like Mathematics. Verbal testimony (Sabda) and is used in seminar, group discussion and lecture method.

UNIT 7 MEDIEVAL (ISLAMIC) INDIAN CONCEPT AND NATURE OF KNOWLEDGE

Structure

7.1 Introduction

7.2 Objectives

7.3 Islamic View of Knowledge

7.4 Fundamental and Liberal Views about Knowledge

7.5 Definition and Meaning of Knowledge in Islamic Tradition

7.6 Sources and Types of Knowledge

7.6.1 Logic and Knowledge

7.6.2 Types of Knowledge: Philosophical and Prophetic

7.7 Theory of Knowledge in Islam: Issues Raised

7.8 Modes of Communicating Knowledge

7.9 Common Features of Islamic Knowledge or Categorisation of Knowledge, Relevance and Implications of Knowledge

7.10 Socio-cultural Impact of Islamic Knowledge on Contemporary and Present System of Indian Education

7.11 Some Major Features and Strength of Islamic Concept of Knowledge

7.12 Let Us Sum Up

7.13 Unit-end Activity

7.14 Points for Discussion

7.15 Suggested Readings

7.16 Answers to Check Your Progress

7.1 INTRODUCTION

During the medieval period of Indian history, which roughly spreads over a span of about eight hundred years, Indian society had witnessed an intimate and influential interaction with Islamic culture and civilisation through its followers, which after the advent of Islam in seventh century A.D. in Arabia, had gradually reached out to many Asian, African and European societies. Islam, for its followers, was not merely a faith or a religion, rather it was a complete way of life, which they had come to realise through their deep understanding of the Islamic philosophy and knowledge based on the holy Quran and the Hadith of Prophet Mohammad. In eleventh century A.D., followers of Islam gradually arrived onto the Indian soil and influenced socio-cultural aspects of life including education. In this unit, we will discuss the concept and nature of knowledge in Islam, sources of this knowledge, its influence on education in India during the medieval period.

7.2 OBJECTIVES

After going through this Unit, you should be able to:

- differentiate between fundamental and liberal Islamic view of knowledge;
- define the concept of knowledge in Islamic tradition;

- identify the sources of knowledge;
- discuss the major types of knowledge in Islamic tradition;
- discuss the issues raised on theory of knowledge;
- describe various modes of communicating knowledge;
- explain the common features of Islamic knowledge; and
- assess the impact of Islamic knowledge on contemporary and present system of Indian education.

7.3 ISLAMIC VIEW OF KNOWLEDGE

In order to understand the Islamic view of knowledge, first we need to be clear about the Islamic concept of Reality, as the quest of truth inherent in this reality leads to creation of knowledge and is transmitted to mankind through a particular system of education. The philosophical concepts of Reality and knowledge in Islam and the fundamental Reality of God and worship, etc. will be discussed here. These concepts have had their direct bearing on the education system that was in vogue in India during the medieval period.

Islam, as mentioned in the Quran, is Theo-centric because the only true reality, according to it, is God. God is the ultimate reality as He is the Ultimate Being and the only true reality is One God, Allah, the Necessary Being. Everything else in this creation is contingent upon His Will. God, according to the Islamic scripture is Absolutely Real (al Haqq). He is not a projection of man's mind nor is He a product of resentment of those who have fallen short. He is neither an illusion of those who have remained infantile, as Freud opines, nor is He an opium of the masses as conjectured by Marx, .He is Eternally Living, transcending the limitations of spatio-temporal order, being the First, the Last, the External and the Internal. The exact nature of God is not knowable for He is beyond comprehension.

"He is omnipotent, to Him is due the primate origin of everything. He is the creator. He created the Heavens and the earth and what is there in the universe. He is the sole Self Subsisting Being, all pervading, Absolute Reality" (Holy Quran).

From the most important reality, which is One God, has emerged one humanity, which though divided into races and tribes, male and female, is essentially one in its purpose on earth and in its ultimate destination. The unity of God who is Truth, the Light, logically implies the unity of knowledge and the unity of prophethood. The unity of knowledge means that there is no bifurcation between what is called secular and religious sciences, neither in their teleology nor in utility. The knowledge contained in Islamic scripture is basically concerned with man, and its primary intent could be interpreted as functional to man's positive cognitive – moral growth as well as to vindicate the orderliness of this universe.

Thus, according to Islam, God is the source of all knowledge and he has given knowledge to man. Some of knowledge is revealed by God to his messenger, the Prophet Mohammad in the form of the Quran, which comprises essentials of morals and faith, etc., and some knowledge is given to man which he can explore through his own efforts. This includes knowledge related to the natural phenomena. So, according to Muslim philosophers, human knowledge is of two types : (1) Knowledge based on proof; and (2) Knowledge based on direct experience through religious devotion and revelation. The knowledge obtained by Sufis is obtained by religious devotion whereas knowledge of the Prophet is revealed by God. Al Farabi (Quoted in Inati, 1998) a Muslim philosopher, has classified knowledge into practical and theoretical. The latter knowledge helps the soul to achieve perfection and the former is related to human conduct. In the opinion of another famous Muslim philosopher, al-Ghazali (Quoted in Leaman, 1998) there are two types of knowledge, viz. the intuitive knowledge and

the knowledge acquired by rational effort. The intuitive knowledge leads to perfection of the soul and the knowledge acquired through experience, observation and rational effort leads to development of sciences. The former knowledge may be termed as religious sciences and the latter as liberal sciences. Ibn Khaldun (Quoted in Leaman, 1998) also has classified knowledge into two kinds and has used almost the same basis of this classification as has been applied by other former Muslim philosophers. The two kinds of knowledge according to him are, Ulum Tabaiyya or Aqliyya (knowledge based on intellectual and rational processes of the mind) and Ulum Naqliyya (knowledge received without the use of rational physical processes of the mind). The former Ulum (knowledge) are based on observation and deduction, and the latter depend on revelation. Ulum Aqliyya comprise Logic, Arithmetic, Astronomy, Physical and Biological Sciences, etc and Ulum Naqliyya include Quran, Hadith, Fiqh, Kalam, Theology, etc. Fakhr al-Din al Razi (Quoted in Leaman, 1998) in his book Jami-al-Ulum classifies and defines various Muslim sciences in a more elaborate manner. He terms them as aqli (intellectual) sciences and naqli (traditional) sciences. Among naqli or traditional sciences again he has made two broad categories viz religious sciences and linguistic sciences. Religious sciences include theology, jurisprudence, dialectics, Quran and Hadith whereas linguistic sciences deal with grammar, syntax, etymology, prosody and poetry. Aqli or rational sciences, the other major category, includes natural philosophy, physics, astronomy, alchemy, optics and music.

7.4 FUNDAMENTAL AND LIBERAL VIEWS ABOUT KNOWLEDGE

Islamic philosophers have generally classified knowledge into two broad categories as stated above. It is generally held by them that the knowledge given by God through revelation i.e. Quran is the fundamental and noblest knowledge. It is held that the Quran is the complete and final revelation from God so it is a complete guide for man in his worldly affairs as well as for his salvation. It is the knowledge that forms the basic core of all knowledge that man may acquire and hold, and this being fundamental for successful living of mankind must be possessed by all for their good of all kind. They argue that there is no other knowledge except that which is based on the Quran that can guide man. The Quran is the knowledge par excellence and the life and teachings of Prophet Mohammad to whom the Quran was revealed is the most perfect interpretation of the Quran. So the Prophet's life and sayings (traditions and Hadith or Sunna) are the true guides for Muslims. Thus, the Quran, the Hadith, and Shariyah (God's Laws) are the essential and fundamental elements of knowledge worth acquiring by Muslims. Devotion to God through worship is the practical aspect of the fundamental knowledge acquired through the Quran and the Hadith.

On the other hand lies the second kind of knowledge which is the knowledge of rational sciences or knowledge of liberal or secular sciences which should also be acquired by Muslims. In fact the Quran itself repeatedly encourages and stimulates Muslims to explore this kind of knowledge by following rational and systematic process of observation, reflection, discovery, etc. However, the first kind of knowledge which reveals the true relationship between man and God should form the basis and foundation for the second one. Islamic scholars argue that if the knowledge of the second kind is obtained without reference to the first then it will lead to confusion and will create doubt and skepticism. It is for this reason that Muslim philosophers made the knowledge based on the Quran and the Hadith obligatory for all Muslims and the knowledge of sciences obligatory for those who can do justice to it. However, one terms that through the Quranic injunctions none is barred from exploring these liberal sciences, rather all are encouraged to explore the knowledge hidden in the universe by the use of intellect and wisdom and to use it not only for the good of man. In fact all should, through it, develop a deeper understanding of the powers and qualities of God.

7.5 DEFINITIONS AND MEANING OF KNOWLEDGE IN ISLAMIC TRADITION

As has been stated earlier, the theory of knowledge has been the main preoccupation of the Muslim philosophers. Muslim philosophers have been primarily concerned with human happiness and its attainment. They may have different views on human happiness which may range from this-worldly happiness to that-worldly happiness. However, all of them agree that it can only be achieved through knowledge and all have advocated acquisition of knowledge for the good of human beings and their societies.

Islamic philosophers, much in the same way as the Greek philosophers did, agree that knowledge of the reality can be attained at its highest level by application of the intellectual tool of logic and through this ability, to perfect the understanding and establish contact with the principles which underlie the whole of reality. But at the same time they agree that knowledge also includes essentials of morals and faith, etc which have been handed down by God to man by direct revelation through His prophets.

So, as Inati (1998) rightly put it, they consider knowledge to be the grasping of the immaterial forms, natures, essences or realities of things. They agree that forms of things are either material (that is existing in matter) or immaterial (existing in themselves). While the latter can be known as such, the former cannot be known unless first detached from their materiality. Once in the mind, the pure forms act as the pillars of knowledge. The mind constructs objects from these forms and with these objects it makes judgements. Thus Muslim philosophers, like Aristotle, divided knowledge in the human mind into conceptions (tasawwur), apprehension of an object with no judgement, and assent (tasdiq)- apprehension of an object with a judgement, the latter being, according to them, a mental relation of correspondence between the concept and the object for which it stands. Conceptions are the main pillars of assent and without conception one cannot have a judgement. In itself conception is not subject to truth and falsity but assent is. In Islamic philosophy, rightly says Inati, conceptions are mainly divided into the known and unknown. The former are grasped by the mind actually, the latter potentially known conceptions are either self-evident (that is, objects known to normal human minds with immediacy such as "being", "thing" and "necessary") or acquired (that is, objects known through meditation, such as "triangle"). With the exception of the self-evident conceptions, conceptions are known or unknown relative to individual minds. Similarly, Muslim philosophers divided assent into the known and unknown, and known assent into the self-evident and the acquired. The self-evident is exemplified by 'whole is greater than the part', and the acquired by the world is 'composite'. In the Kitab-al-tanbih ala sabil as saada (The Book of Remarks Concerning the Path of Happiness) al Farabi (Quoted in Inati, 1998) calls the self-evident objects 'the customary, primary well known knowledge, which one may deny with one's tongue, but which one cannot deny with one's mind since it is impossible to think their contrary'. Of the objects of conception and assent, only the unknown ones are subject to inquiry. By reducing the number of unknown objects one can increase knowledge and provide the chance of happiness (Inati, 1998). Islamic philosophers agree that the seat of knowledge in human beings is the soul of man or spirit and the intellect which are in turn based on his dual nature that is, he is both soul and body. Moreover, God has also equipped man with faculty of right vision, which guide him to the right path, provided an effort is made by him. This effort only will help him in discrimination of right from wrong and truth from falsehood. To attain truth and knowledge of reality and to be able to follow the command of God, therefore, it is essential that man should try to assert the supremacy of the rational soul and suppress the animal and irrational soul.

7.6 SOURCES AND TYPES OF KNOWLEDGE

In Islam, the Quran is considered the primary source of knowledge. It believes that everything that exists including knowledge originates from God. This has been repeatedly stated in the holy scripture in these words: "Truth comes from God alone, be not of those who doubt"; "God is all knowledge. He is truth, with him are the keys of the unseen, the treasures that none knows but He" (Quran). Alongwith the Quran, Sunna or Prophet's Traditions is another fundamental source of knowledge. According to Islam, knowledge is also acquired through use of logical tools of rational thinking and systematic observation of the matter in this universe.

Revelations (Wahy), which all prophets received from the Divine source, is the most certain knowledge. The Quran also indicates that there exist other sources of knowledge, the proper study and orientation of which will complement the Truth of revealed knowledge, for ultimately they are derived from the same source: God, the Originator of all things. The other sources of knowledge are natural phenomena, human psychology and history.

Prophet Mohammad as the other source of knowledge is the perfect and excellent interpreter and example of the Quranic interpretation. The Prophetic Sunna, to many scholars, are based on the prophet's many conducts and sayings and are a part of authentic knowledge and help in interpretation and understanding of the messages and commands of the Quran. The Quranic revelations and the Sunna thus may form parts of the same type of knowledge i.e. prophetic knowledge and same basic source of revelation and prophetic sayings.

The third source of knowledge as stated earlier, is the systematic and rational observation, reflection, and discovery of the reality lying in the physical matters scattered on earth and in the universe.

Thus all these sources of knowledge lead to creation of two broad types of knowledge viz (i) knowledge based on proof (al burhan) and (ii) knowledge based on direct experience through religious devotion and revelation (al qawl ash shariah). al-Ghazali (Quoted in Leaman, 1998) calls these two types of knowledge the intuitive knowledge and the knowledge acquired by rational efforts. The intuitive knowledge leads to perfection of soul and knowledge acquired through experience, observation and rational effort leads to development of sciences or liberal sciences.

In Islamic philosophy there are two theories about the manner in which the number of unknown objects is reduced. One theory stresses that this reduction is brought about by moving from known to unknown objects, the other says that it is merely the result of direct illumination given by the divine world. The former is the upward or philosophical way, and the latter one is the downward or prophetic way based on revelation (wahy). According to the former theory, movement from the known objects of conception to the unknown ones can be effected chiefly through the explanatory phrase (al qaw-ash shariah). The proof (al burhan) is the method for moving from the known objects of assent to the unknown ones. The explanatory phrase and the proof can be either valid or invalid, the former leads to certitude, the latter to falsehood. The validity and invalidity of the explanatory phrase and proof can be determined by logic which is a set of rules for such determination. Ibn Sina (Quoted in Inati, 1998) points out that logic is a necessary key to knowledge and cannot be replaced except by God's guidance, as opposed to other types of rules such as grammar for discourse (which can be replaced by a good natural mind) and matter for poetry (which can be replaced by good taste). By distinguishing the valid from the invalid explanatory phrase and proof, Inati also argues that logic serves a higher purpose, namely, that of disclosing the nature or essence of things. It does this because conceptions reflect the reality or nature of things and are the cornerstones of the explanatory phrase and proof. Because logic deals only with expressions that correspond to conceptions, when it distinguishes the

valid from the invalid it distinguishes at the same time the realities or nature of things from their opposites.

7.6.1 Logic and Knowledge

Since logic deals only with the known and unknown, it cannot deal with anything outside the mind. Because it is a linguistic instrument (foreign in nature to the realities of things), it cannot deal with such realities directly, whether they exist in the mind or outside it, or are external to these two realms of existence. It can only deal with the states or accidents of such realities, these states comprising links among the realities and intermediaries between the realities and language. Logic therefore deals with the states of such realities as they exist in the mind. Such states are exemplified by 'subject' or 'predicate', 'universality' or 'particularity' 'essentiality' or 'accidentality'. In other words, logic can deal with realities only in that these realities are subjects or predicates, universal or particular, essential or accidental and so on. Because the ultimate human objective is the understanding of the reality, essence or nature of things and because the ultimate logical objective is the understanding of conceptions, logicians must focus on the understanding of those conceptions that lead to the understanding of the essence if they intend to serve humanity. Ibn Sina (Quoted in Inati, 1998) points out that since the essences are universal, such expressions are also universal in the sense of representing universal conceptions such as 'human being', not in the sense of being universal only in expression, such as Ahmad. A universal expression can be applied to more than one thing, as the last two examples show, but one must keep in mind Ibn Sina's (Quoted in Inati, 1998) distinction between these two types of universal expressions: the former represents reality, although indirectly, the latter does not. It is only the former with which the logician should be concerned.

Considering that the discussion of universals occupies a central place in Arabic logic, it is important to focus briefly on this subject to ensure understanding of the proper objects of knowledge of the natures of things. Muslim philosophers divide universal expressions into five types, known together as the five predicables:

1. Genus: Genus refers to the common nature of all the species that fall under it, such as 'animalist' for 'human being, 'dog', 'cat' and so on. As such it tells us what the general nature of a thing is.
2. Species: Species refers to the common nature of all the individuals that fall under it such as 'human being' for Ahmad , Kamal and John. As such, it tells us what the specific nature of a thing is.
3. Difference: Difference refers to that which differentiates the members of the genus, such as 'rational', which differentiates the species of human being from other animal species; it tells us which thing a being is. These three universals are essential to a thing; that is without them the essence will not be what it is.

   Property and common accidents are accidental, in that they attach to the thing but are not part of its essence.
4. Property: Property refers to something that necessarily attaches to one universal only, such as 'capacity for laughter' for 'human being'.
5. Common accident: Common accident refers to quality that attaches to more than one universal, either in an inseparable manner such as 'black' for 'crow', or in a separable manner, such as 'black' for 'human being'. The inseparability of the common accident, however, is only in existence. (Inati, 1998)

7.6.2 Types of Knowledge: Philosophical and Prophetic

Going by the details of the sources of knowledge it may be said that in Islamic philosophy only two broad types of knowledge exist. One may be called as philosophical knowledge and the other as prophetic knowledge. The former knowledge is based primarily on man's interaction with and experience of the physical reality existing in the surrounding

universe or environment which comes to him, through his sensory system, in a highly logical manner. The latter, the prophetic knowledge consists of that knowledge which is not based on apparent sensory experiences rather, which comes down to the human mind of a prophet through direct revelation, illumination or wahy descended on him by God. This knowledge may also be called as divine knowledge. The modes of communication of this knowledge have been discussed in detail in the next parts of this unit. However, it needs to be remembered that Muslim philosophers believe that both types of knowledge are the representation and manifestation of the same common Truth expressed by the common Reality of one God and both should have a commonality of goal of knowledge and education.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of the unit.

1. Differentiate between fundamental and liberal views of Islamic knowledge.

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2. What are the sources of knowledge in Islam.

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3. Differentiate between philosophical knowledge and the prophetic knowledge.

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7.7 THEORY OF KNOWLEDGE IN ISLAM: ISSUES RAISED

The basic sources of prophetic knowledge in Islam viz the Quran and the Sunna of the Prophet are applied to handle various issues concerning man in general and Muslims in particular through the method of Islamic Hermeneutics which helps in the interpretation of the two fundamental sources which were closely connected with the historical struggle of the Prophet and the earliest Muslim community. The process of hermeneutics enables the community understand and apply values, principles and injunctions enshrined in the two sources for various issues and contemporary problems. Thus it becomes very important that a proper interpretation of the Quran and Sunna is done by the community by application of a proper method of hermeneutics. In fact, this interpretation has been quite important for Muslims from the earliest times. It is due to the application of different methods of interpretation of these sources as well as the use of two important roots of the docrine viz Ijma (agreed opinion of theologians and lawyers on the question at hand) and Qiyas (an analogy) along with the Quran and Sunna (particularly during the early period of Islam) that the four different schools of Islamic law and theology which are the main parts of Islamic jurisprudence have

come into existence. These schools are known by the names of their main interpreters viz Hanefite School, Shafaii School, Maliki School and Humbalites School. Their methods of interpretation are elaborate and systematic. In some interpretations however, there have been some important deviations from the teachings of the Quran and Sunna when taken as a unitary whole. The deviations have been caused primarily by the lack of a comprehensive and systematic articulation of the Islamic world view and excessive dependence on grammatical and philological analysis. It is in this context that scholars have suggested that application of the approach of the sociology of knowledge would be useful in our understanding of Islamic sources and thought.

However, while using this approach the methods used by other classical scholars, for example, use of philological and semantic analysis and the "occasions of revelation" (asbab-al-nuzul) are not altogether ignored rather, these are also utilized extensively wherever required. This may be noted that Muslims have been, to a great extent, forerunners in the discipline of sociology of knowledge when they placed a high priority on the importance of occasions of revelation' in the understanding of the Quranic legal injunctions. In fact the process of tafsir (exegesis) of Quranic verses by scholars which continues till the present time is not possible without occupying oneself with the stories and explanations of the reasons for revelation of these verses. Islamic scholars argue that since the Quran is from God and since God's knowledge and wisdom that is imparted in Quran is not confined to or exhausted by, a society and its history, the intent of the sociological approach should not be construed to relate divine wisdom and they confine it to a specific socio-historical moment; its purpose is to affirm His wisdom in dealing with His creatures who exist within the space-time dimensions. Moreover, the Quran is basically concerned with man. In its statements about the Divine, the primary intent could be interpreted as functional to man's positive cognitive-moral growth as well as to vindicate the orderliness of this universe.

7.8 MODES OF COMMUNICATING KNOWLEDGE

Based on our earlier discussion on sources and categories of knowledge as recognised by Muslim philosophers and scholars in the light of the Quran and Sunnah it may stand clear that there are two major modes of communication of knowledge to the mankind. One mode is based on revelation from God to his Prophet and sometimes, as asserted by a section of scholars, to the mystics through the approach of mysticism or sufism and the second mode is which based on a rational process of experience and observation by human intellect. These modes of communication of knowledge are termed as prophetic and philosophical ways that lead to the formation of concepts and universal essences forming the corpus of human knowledge. Muslim philosophers have first discussed the structure of the human soul and then the steps through which the universals on pass their way to the place of knowledge. As stated above, the conception comes to the mind through either the philosophical way or the prophetic way. The philosophical way requires the individual to first use his/her external senses to grasp the universals, as they exist in the external physical world mixed with matter. Then the internal senses, which like the external senses are a part of animal soul, take in these universals and purify them as much as possible. The imagination is the highest internal sense in which these universals settle down until the next cognitive experience occurs. These philosophers believe that above the senses there is the rational soul which has two parts: the practical and theoretical intellect. The theoretical intellect is responsible for knowledge development and practical intellect for proper management of human body to guide it to do good and avoid the bad.

The prophetic mode of communication of knowledge is much easier and simpler. One need not take any action to receive the divinely given universals; the only requirement seems to be the possession of a strong soul capable of receiving them. This may be

noted that while the philosophical and rational way moves from the imagination upward to the theoretical intellect, the prophecy way takes the reverse path from the theoretical intellect to the imagination. For this reason, knowledge received through the philosophical or rational mode is knowledge of the nature of things themselves, while knowledge of prophecy is knowledge of the nature of things as wrapped up in symbols, the shadows of the imagination.

Thus prophetic and philosophical truth is the same, but it is attained and expressed differently. One of the most important contributions of Islamic philosophy is the attempt to reconcile Greek philosophy and Islam by accepting the philosophical and prophetic path as leading to the same truth.

To sum up, it may be said that there are two broad sources of knowledge that the Quran recognises – revelation (wahy) or prophetic knowledge and human reason (aql) or philosophical knowledge. Prophets of God carry through revelation Divine messages, prophecies and laws, the three important constituents or elements of revelation. It is interesting to note that for knowledge based on human intellect the Quran never uses the term of reason or intellect (aql) directly rather it places high priority on thinking and contemplation. The primary interest of the Quran is to emphasise the act and process of knowing rather than the physical locus of knowledge. The processes of thinking and knowing in the Quran are conveyed by several verbs, such as aqila, faqiha, tafakkara, hasiba, zanna, itibara, tadabbara and hakima, all of which must originate in the sense perception. Thought in Islam should be grounded in facts or data, either from nature, man's physical or psychological realities and the movements of History. Even in thinking and contemplating the unseen existence of God, for example, the Quran appeals to the human mind to reason from the basis of the natural, historical and physical environment.

Acquisition and dissemination of knowledge both, philosophical and prophetic, was emphasised in Islam right from its inception as is evident from a large number of the Quranic verses as well as traditions of the Prophet which are explicitly in praise and exhortation for the acquisition of knowledge and its propagation for the good of the mankind. The Quran repeatedly invites man to use his senses and exercise his reasoning faculties and thereby reach the ultimate truth. It states that there is no limit to knowledge, that the whole universe is made for and is subservient to man, and that it can be conquered and made to serve the interest of mankind. The attitude of Islam towards knowledge, its attainment and dissemination among others is not only positive and emphatic rather, it is considered an ordained duty of all believers. It is for this reason that right from the early days of Islam a tradition to impart education had begun on a large scale and the tradition got strengthened with the passage of time and establishment of formal institutions of learning in Islamic societies. Interestingly, these attempts on acquisition of knowledge and its systematic dissemination did not see much discrimination between Islamic or prophetic sciences and rational and liberal or physical sciences for centuries together. In fact, on many occasions attempts to promote Islamic sciences at the cost and ignorance of the rational and physical sciences was heavily resented and opposed by Islamic scholars themselves. In the beginning of Islam, the knowledge as it converged from both the streams was taught in mosques which were the main centres of Islamic educational activities then, but later on madrasas were established where both, religious and philosophical subjects were taught and researched. These included the Quran, Hadith, Theology, Philosophy, Jurisprudence, Physical Sciences, etc.

7.9 COMMON FEATURES OF ISLAMIC KNOWLEDGE OR CATEGORISATION OF KNOWLEDGE, RELEVANCE AND IMPLICATIONS OF KNOWLEDGE

We have discussed in detail the theory of knowledge, as it is in Islam and the classification of knowledge, etc in previous pages. The Islamic knowledge has following common features.

1. Domination by Islamic philosophy of knowledge. The medieval period saw the birth and rise of the Islamic philosophy of knowledge which was developed and promoted by Islamic or Muslim philosophers mainly drawn from West Asia and Central Asia. These philosophers were basically concerned with human happiness and its attainment, which comes through knowledge.
2. Influence of Greek Philosophers : The nature and concept of knowledge in medieval period was primarily influenced by the Greek philosophers particularly Plato and Aristotle and several others. Knowledge is the grasping of the immaterial forms, natures, essences or realities of things. Islamic philosophers agree that forms of things are either material (existing in matter) or immaterial (existing in themselves). While the latter can be known as such, the former cannot be known unless first detached from matter.
3. Two Basic Sources of Knowledge: There are two basic sources through which knowledge of the realities can be attained. One is the prophetic source wherein the method of revelation is used by the divine power. The other is philosophical process of understanding the universe, which is attained by following a rational process of observation, and experience of the material phenomena existing in the universe through the use of senses. The prophetic mode of receiving knowledge is very simple and easy. In this process, direct illumination is given by the Divine world to the human mind. For acquisition of this knowledge one need not take any action to receive the divinely given universals. However, it requires presence of a strong soul capable of receiving divinely knowledge. In the philosophical or rational source of knowledge, the number of unknown objects is reduced by moving from known objects of conception to unknown ones. The former follows a downward or prophetic way and the latter follows the upward or philosophical way.
4. The Quran and the Tradition of the Prophet or Sunna are the main sources of the prophetic knowledge, whereas the physical and material objects and experiences on earth and in the universe are the sources of rational or philosophical knowledge. The ultimate aim of both forms of knowledge is to help man know the ultimate reality, God, which lies in the Creator of man and the universe.
5. All Muslim philosophers believe that above the senses there is the rational soul which has two parts viz the practical and the theoretical intellect. The theoretical intellect is responsible for knowledge, whereas the practical intellect is meant for and concerns itself only with the proper management of the body through apprehension of particular things so that it can do the good and avoid the bad.
6. Islamic philosophy of knowledge encourages the believers and followers to acquire knowledge by continuously engaging their minds in various mental and intellectual processes. It divides knowledge into two broad categories of knowledge prophetic knowledge or Islamic sciences, and rational or liberal sciences. Man is encouraged to attain both forms of knowledge. Islamic scholars have discouraged imparting of knowledge of Islamic sciences by ignoring teaching and development of rational or philosophical sciences to its followers.

7. Islam lays more emphasis on knowledge than on worship and regards the learned superior to the devout. It enjoins every Muslim to seek and impart knowledge, not for its own sake but for a better living in this world and a more blissful and eternal life in the world hereafter.

7. 10 SOCIO-CULTURAL IMPACT OF ISLAMIC KNOWLEDGE ON CONTEMPORARY AND PRESENT SYSTEM OF INDIAN EDUCATION

Islamic knowledge was revealed and introduced at a time and place when the people of an area in the Arab world were facing the height of superstition, ignorance and social and cultural degeneration. Islamic knowledge as revealed to/by the Prophet Mohammad in the form of the Quran and his own practices and sayings; as Prophet introduced the most useful corpus of knowledge to the mankind helped remove many social evils like social injustice, gender biases, socio-economic inequality of opportunity, unjust and inhuman treatment to the poor and the weak, superstition, immoral and unethical social practices, etc. Islamic knowledge created an awareness in the mankind of the rights of all human beings, social justice, cooperation and human discipline. It made them conscious of the purpose and mission for which they were created and their obligation to their Creator and the ultimate reality existing in One God. Islamic knowledge heavily emphasised the virtue of knowledge and the benefits of its acquisition and the significance and worth of its dissemination to all members of the human society. It encouraged and persistently stimulated people to acquire knowledge and continue to do so through their lives as it always benefits them both, in this world as well as hereafter. At the same time, it motivated the learner of every hue and level to disseminate and propagate knowledge as it is treated their most divine act and as a result people solitarily participated in this pious activity. Islam introduced an egalitarian approach to education and opened its doors for all sections and classes of the society and encouraged the better offs to take care of the education of the weak and did not discriminate against them in the pursuit of education. The injunction of the Prophet: "Let the poor and rich be equal before you in the acquisition of knowledge" had a wide spread impact on the provision of education and it is said that it had immediately led to the establishment of many scholarships in Cairo, Damascus and elsewhere at that time.

Islamic knowledge as contained primarily in the Quran and Sunna repeatedly encouraged and invited people to search for new knowledge which is scattered all around in God created earth and the universe, ponder over it, explore it, discover it and use the new knowledge of the rational sciences for their good as well as for the good of the humanity. As a consequence, many Muslim philosophers and scientists made their seminal contribution to the corpus of useful knowledge during the medieval period in secular sciences like physics, chemistry, astronomy, engineering, architecture, arts, etc.

In the medieval societies Islamic knowledge had been able to enrich their cultures and social processes and practices and was responsible for introduction of many lasting reforms in socio-political system, civil administration as well as in the economic sphere of life. It was able to introduce the concept and value of equality and social justice in economic and social life through the Quranic and prophetic injunctions.

An important impact of the development of Islamic philosophy and knowledge in the medieval world was the establishment of a well-defined education system in those societies which gradually took root and in most cases became a permanent part of the education system of those societies. The continued emphasis and attention on education by Islamic scholars led to the establishment of the madrassa education system for education of the masses as well as development of huge amount of literature and books useful for students, scholars, jurists, etc in those societies.

The descendants of Muslim rulers on India in eleventh century brought with them their faith, language, culture, technology, crafts, trade, architecture, education system, administrative system, etc. and left an indelible mark on all these aspects of social, cultural, political and economic life of the people of India. The most prominent impact at that time was first seen in the establishment of an education system in many important cities of the country. In some of these cities many grand madrassas were also established at provincial, district and sub district levels. It is common knowledge that many of these madrasas were providing such a good quality education that students and scholars even from other parts of the world used to join these institutions frequently.

The curriculum offered in these madrassas included both religious sciences as well as secular sciences particularly. These included Quran, Hadith, Theology, Ecology, Logic (figh), Physics, Mathematics, Chemistry, Astronomy, etc. The education system during medieval period in Indian subcontinent comprised elementary schools and institutions of higher learning. Besides, a large number of maktabs were also opened in mosques for imparting primary education about Islami and language teaching.

Many madrassas especially during the period of Mughal rulers were thrown open for both Muslims and Hindus and both used to acquire excellent education in them and on its basis, used to get employment in the state administration. Right from the beginning of Islamic education in India, education of girls was paid a significant attention and some separate madrassas for girls were established. Even slaves under the early dynasties of Muslim rulers were provided equal opportunity of education and they used to be admitted in these institutions in large numbers. In fact, for about eight hundred years during the medieval period, the madrassa education system successfully provided educated and trained hands to all parts of administration, judiciary, economic institutions and all other institutions of the society. During the days of the Mughals particularly, the madrasas were also imparting training in various useful crafts and preparing craftsmen, besides producing other educated persons for the society.

However, this education system which remained in vogue in the country for many centuries was affected after the takeover of the power by the colonial rulers in nineteenth century for two important reasons. The British rulers had introduced the modern education system and its passouts were mostly accepted in the administrative set up of the time, and the court language was changed from Persian to English. Both these changes brought down the general relevance and significance of the traditional education institutions in the Indian society.

Moreover, due to loss of power and weakened economic strength of the Muslims the community support to madrassas came down drastically making the system weak and decay. However, despite all odds, the traditional education institutions, though on a limited scale, continued to impart Islamic knowledge to the children of the community even during the period of British rule. The madrassa education system regained some of its lost strength after independence. In the post independence period, the madrasa education system continued to grow, though very slowly, to serve the religious education needs of the community. During the last few decades, some of these institutions have also started imparting education in modern sciences along with the traditional sciences.

The entire madrassa education system meant to impart Islamic knowledge is, however, organised on a voluntary basis by the community itself. In fact, right from their inception these institutions have survived on paltry resources contributed by the community. Only the bigger and renowned ones used to receive monetary support from the landed aristocracy which too was stopped after the loss of political power.

Since the Constitution of India subscribes to the secular ethos and values, the state-sponsored education system, cannot as a rule allow imparting of religious education of any community in state-sponsored institutions. So Islamic education is not imparted in these institutions. However, the community has been granted liberty to establish such institutions to preserve its culture and language.

7.11 SOME MAJOR FEATURES AND STRENGTHS OF ISLAMIC CONCEPT OF KNOWLEDGE

The concept of knowledge in Islam occupies an important place and has been emphasised from the very first day of the launch of this religion. The first verse (sura Ale Imran) of the divine scripture of the Quran revealed on the Prophet begins with a focus on knowledge and learning only. The Islamic concept of knowledge is founded on five fundamental ideas: (i) the idea of one living, omnipotent, omniscient, omnipresent, merciful yet just God; (ii) the idea of man's destiny as His servant and His vice regent on earth who is endowed with freedom coupled with responsibility and accountability; (iii) the idea of prophethood whose mission is to guide man for optimal realisation of his said destiny; (iv) the idea of multi-faceted reality and diversity of life which is a manifestation (ayat or Quranic verses) of God and which is intended to benefit man in his quest for a meaningful existence; and (v) the idea of final judgement on the day of destiny carrying reward and punishment for each human being.

This worldview obviously affects the Islamic concept and theory of knowledge and carries multiple implications for education. The concept of knowledge in Islam has the following key features:

(i) Knowledge is infinite as it originates and ends in the infinite Reality of God who is the absolute knower;

(ii) Since knowledge is an aspect of diversity, seeking it, expanding it and teaching it are important acts of divine worship;

(iii) Believers are encouraged to continuously explore, discover knowledge and conduct valuable researches in various sciences and enrich human civilisation with their intellectual achievements;

(iv) Proper and sincere application of knowledge in one's personal and collective life forms the foundation of human excellence in Islam;

(v) The concept of knowledge is an integrated one; whether it is found in the Quran, Sunna, in nature, history or in the inner experiences of man.

(vi) The teachings found in the two fundamental sources of the Quran and Sunna provide stability and paradigms to deal with all changes in human lives and environment.

(vii) At the same time, different inner experiences of man, history and natural phenomena provide avenues for a new interpretation of the teachings of these basic sources of Islam and thus man should be trained and prepared for the same.

(viii) This obviously requires a concept of life long never ending comprehensive process of education. Life long learning and research not merely as a professional obligation of a section of the community rather more importantly as a religious virtue for all is stressed.

(ix) Since responsibility for education is an obligation of all Muslims, its opportunity theoretically and practically has to be open for all. This calls for democratisation of education which would only benefit Islam and mankind the most.

(x) Knowledge should not be regarded as an end in itself, rather it is a means to achieve something higher and more sublime. By making it a firm basis of the practical intellect throughout his life the believer should strive to achieve the goal of reaching the paradise in the world hereafter. On way, this practice will also bring peace and prosperity in this world as well.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of the unit.

4. What are the modes of communication of knowledge?

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5. What was the curricular focus in Madrassas?

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7.12 LET US SUM UP

In this unit, we emphasized the following major points:

- Islamic concept of knowledge has both fundamental and liberal views. Fundamental view of knowledge is based on the knowledge of reality as contained in the Islamic scriptures of the Quran and Sunna or sayings and traditions of the Prophet and liberal view includes knowledge of reality existing in the physical universe around man.
- Human happiness in this world as well the life hereafter is entirely based on acquisition of knowledge of the reality which can be achieved by the application of intellectual tool of logic for a perfect understanding of the principles underlying the ultimate reality which originates and ends in God.
- There are two types of knowledge which is based on two major sources. These are prophetic knowledge and philosophical knowledge. Their sources are termed as prophetic source, based on divine revelation in the Quran and the Sunna of the Prophet, and philosophic source based on rational processes of discovering knowledge followed by human mind. The former source leads to creation of prophetic knowledge and the latter to philosophical knowledge.
- The Islamic knowledge is meant for application in dealing with and solving various issues concerning mankind in general and the believers in particular. Ultimately the Islamic knowledge is functional to man's positive cognitive – moral growth.
- Two main modes of communication of knowledge to the mankind are recognised. One is prophetic revelation to the prophet and through him knowledge is disseminated to the common people and the other one is the rational process of acquiring experience based on observation and experimentation through the means of senses. All Muslims are obliged to seek knowledge of all kinds as well as disseminate it to others.
- The Islamic concept of knowledge carried a widespread effect on the education process of societies of the world. It led to general awakening for education and research particularly in liberal sciences and made Muslim philosophers and scholars to contribute to the development of knowledge during medieval period.

- An education system based on this philosophy of knowledge which was implemented through a well organised curriculum, methodology of teaching learning and institutional set up of maktabs and madrassas flourished across the Islamic world during the medieval period.
- In India this educational philosophy and education system came with Muslim rulers in eleventh century and saw establishment of large number of educational institutions at different levels both for man and women as well as for ruling class and for the subjects. These educational institutions flourished until the onset of the colonial rule in the country.
- During its presence, experiments in curriculum and methodology of teaching Islamic and liberal knowledge were carried out which gave birth to different forms of curriculum for Islamic education.
- Islamic education, as it got implemented in the country enriched the Indian culture, its value system, and also its languages and helped in improving literacy and indiscriminate access to education on a significant scale. The education system also brought some social changes in the Indian society and also led to reforms and growth in the economy.
- At present the Islamic education system operates in the country on a limited scale for a limited purpose of serving the community for meeting its religious education needs with a few exceptions of teaching in liberal science education.

7.13 UNIT-END ACTIVITY

1. Visit some madrassas in your locality and examine whether Islamic views about knowledge are reflected in curricular practices of madrassas.

7.14 POINTS FOR DISCUSSION

1. What is the origin and basis of Islamic concept of education?
2. Discuss the relationship between the different sources and types of knowledge recognised by Islamic philosophers.
3. What are the primary and secondary objectives of Islamic education?
4. When and in what form Islamic education system was introduced in India? Trace its impact on the socio economic and cultural aspects of life in India
5. What is the present status of Islamic education in India?

7.15 SUGGESTED READINGS

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7.16 ANSWERS TO CHECK YOUR PROGRESS

1. According to fundamental view, knowledge is given by God through revelation i.e. the Quran is the fundamental and noblest knowledge. This is the knowledge that man may acquire and hold. But, according to liberal view, knowledge is acquired by following rational and systematic process of observation, reflection, discovery, etc.
2. i) The Quaran
   ii) Sunna or Prophet's traditions
   iii) Systematic and rational observation, reflection and discovery of the reality.
3. Philosophical knowledge is based on man's interaction and experience of the physical reality existing in the universe or environment which comes to him, through his sensory system, in a highly logical manner. Prophetic knowledge consists of that knowledge which comes down to the human mind of a prophet through direct revolution, illumination or wahy descended on him by God.
4. There are two modes of communication of knowledge. These are prophetic and philosophical modes. The prophetic mode is based on revelation from God to his Prophet or to the mystics through the approach of mysticism. The philosophical mode is based on rational process of experience and observation by human intellect.
5. The curriculum offered in Madrassas included both religious as well as secular sciences. The subjects like Quaran, Hadith, Theology, Ecology, Logic, Physics, Mathematics, Chemistry, Astronomy, etc. were included in the curriculum.